The CHEMIST

MAY, 1940 VOLUME XVII, No. 5

PROCEEDINGS OF THE ANNUAL MEETING.

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V. F. KIMBALL, *Editor*, 233 Broadway, New York City

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FRONT COVER PICTURE: From left to right: Mrs. Robert J. Moore with Dr. Robert J. Moore, retiring president of The American Institute of Chemists; Mrs. Harry L. Fisher with Dr. Harry L. Fisher, newly elected president of the Institute, at the Annual Meeting in Atlantic City, New Jersey.

THE AMERICAN INSTITUTE OF CHEMISTS
HOWARD S. NEIMAN, *Secretary*
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New York, N. Y.

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Progress in Petroleum

by **Dr. Gustav Egloff**
Universal Oil Products Company
Research Laboratories
Chicago, Illinois

In acceptance of the Medal Award of The American Institute of Chemists

CRUDE petroleums range from almost pure gasoline to solid asphalt as produced in the oil fields of the world. They have odors ranging from the rose and musk to a vileness greater than the skunk. Their colors when viewed in transmitted light vary from cherry, amber, yellow, green, and reddish-brown to dense black, and under reflected light some crudes are highly fluorescent. Crude oils are composed of paraffinic, olefinic, naphthenic, and aromatic hydrocarbons. Many crudes contain sulfur in combination with the hydrocarbons in amounts from traces to more than six per cent—while nitrogen and oxygen vary from 0.1 to more than one per cent. Traces of metals such as platinum, gold, silver, uranium, vanadium, and titanium have been found in some crude oils. A few Rumanian crude oils are highly radioactive.

Crude oils are literally a wonder source of substances that are the foundation stone of a number of industries, with many more to come. Their effect ramifies throughout our social and economic life and they will be a controlling factor in ultimate victory in a world aflame.

A forward looking group of executives, chemists, physicists, engineers, and a host of other professions have made the oil industry what it is—a $14,000,000,000 organization in the United States. An amazing amount of research is going on in every branch of the industry

at an expenditure of over $100,000,000 a year in order to discover and transport crude oil to refining centers for conversion into products useful to man.

The oil industry is doing everything possible to locate and conserve crude oil by calling upon the best scientific and technical knowledge available. Enormous savings have been brought about by the use of geophysics and chemistry, and deeper and directionalized drilling. The Pacific Ocean bed has been drilled from the shore and oil produced. Some lakes in Louisiana and the Gulf of Mexico yield large quantities of crude.

Many of the 360,000 oil wells in operation in the U. S. were drilled in recent years, but substantial production still comes from wells brought in more than fifty years ago in the original oil state, Pennsylvania. Continued production from these old wells has been brought about by improved methods of oil recovery by so-called repressuring. Water is injected through auxiliary wells surrounding the oil well in order to build a hydrostatic pressure in the oil sand. This water flooding process has increased oil production in the famous Bradford field which was discovered in 1875. Production in this field dropped to its lowest point in 1900, when it was considered almost exhausted. Since then, by the use of water flooding, production has been increased eleven-fold above that of the low.

Water-flooding, scientifically controlled so that no damage is caused in the oil formation, is one of several secondary recovery methods developed by the oil industry to increase production from oil sands which apparently are depleted. This method recently was legalized in Ohio, and already has been introduced successfully in one of that state's older fields. Gas injection, and air injection, similarly designed to build up pressures in underground oil formations and increase recovery, also have made startling advances in recent years."

As the bit bites its way toward the nether regions, water layers or heaving shales are encountered which are sealed off by chemical means. To control oil well pressures, some above 2,000 pounds, and to prevent the well from blowing out, hurtling the tools, casings, etc., a thousand feet or so in the air, counteracting columns of colloidal muds are used, which allow the well to produce oil quietly under controlled pressure due to the weight of the mud-counter to the oil well pressure.

Some years ago in Texas a huge well came in, ripping a crater into the earth and resulting in a terrific fire. There were no methods known of fighting this type of fire. For years the oil industry had

been cursed by drilling crooked holes which was inevitable at that period. At times these holes ran parallel to the ground and in some instances actually made a U-bend with the other end of the pipe coming up about a thousand feet from the derrick floor. One of the engineers suggested purposely drilling a slanting hole so that the bit would enter the oil sand. Water was then pumped into the sand, shutting off the fire.

This directionalized drilling was highly successful. Wells may now be drilled in any direction, by a number of ingenious physical and chemical methods. As many as eight wells have been drilled from a single derrick floor in different directions and levels to study the geology and composition of the earth. The deepest well drilled so far is about three miles. It is certain that wells will be drilled and oil found at depths of five miles or more.

In 1860, one year after the Drake well was brought in at a 69-foot level, an oil shortage was predicted as the prevailing rate of oil consumption would exhaust the supply in a few years. This prediction has been reiterated at about five-year intervals ever since. In 1860, the United States crude oil production was 500,000 barrels and 1,250,000,000 barrels in 1939. Moreover, crude oil reserves of today in the known oil fields are about 20,000,000,000 barrels. During last year alone, approximately 2,000,000,000 barrels of crude were added to our oil reserves above that actually used. Through the years, crude oil reserves have been increasing by finding new oil fields, by deeper drilling in old fields, and by hydrochloric acid treatment, called acidizing, of old and new oil sands.

One of the greatest forces for conservation and well being of our social and economic life is the cracking process developed by chemists and engineers of the oil industry. This process has more than doubled the yield of motor fuel from a barrel of oil with anti-knock quality which gives over 40 per cent more miles per gallon than Nature's gasoline. Since 1913, when the first commercial cracking plant was used, to the present time, a saving of over 13,000,000,000 barrels of crude oil has been brought about. Last year alone, 1,400,000,000 barrels of crude oil were conserved by the use of the cracking units in the U. S. which cost $450,000,000. In short, the oil industry would have had to refine 2,638,000,000 barrels of crude to produce the volume of gasoline necessary to operate the 31,000,000 cars instead of the 1,238,000,000 barrels actually refined.

There is an ever recurrent cry that crude oil is an irreplaceable asset. However, there is evidence to contradict this view. I believe that petroleum is being formed in the earth at a greater rate than we are consuming it. So far as we know, Nature may still be going ahead with the same biochemical changes, the same heat, pressure, and time processes by which crude oil was made in the beginning at least in part. Investigations have brought to light facts regarding earth processes which from their very nature lead me to the belief that oil is continually being formed, although they have not been sufficiently established to confirm it positively.

The theory of continual petroleum formation is supported by the fact that oceans, lakes, and rivers of today abound with fish and mollusks closely resembling those found in many petroleum-bearing formations. Microscopic creatures, such as foraminifera, radiolaria, and diatoms, are present which are identical in body structure with fossils found in the Monterey shale and other oil producing structures, notably in the lompoc and Santa Maria fields of California.

Such diatoms, scooped alive from the ocean today, yield about two per cent of oil by ether extraction, although they contain about sixteen per cent organic material. The possibility that this oil yield may be greatly increased under the temperature, time, and pressure conditions prevailing in the earth, has been considered. It is also likely that some substances such as the silica body structure of the microscopic corpses in the earth exert a catalytic influence which would accelerate oil formation.

Yielding two per cent of oil, the diatoms in the Monterey shale (which constitutes a bed eight hundred square miles in extent and half a mile thick in one section of California) would produce two billion barrels of oil. Present-day sedimentation of organic matter is occurring in closed basins of the Continental shelf particularly along the western coast of California. In other oceans and in the deeper waters along the coast, diatoms are depositing with organic content constantly increasing.

From the foregoing, we may conclude that Nature is producing oil at a faster rate than gas pressure or pump strokes can bring it to the earth's surface. As a matter of interest, since the foundation of the oil industry, the entire world's production of crude oil would not fill a hole a cubic mile in the earth. This is an insignificant volume compared

to what nature must have produced and still is producing during the years of her workmanship.

In view of the increasing volumes of crude oil reserves, the probability of continuous crude oil formation, better utilization of crude oil and its products, and considering the trifling volume of petroleum used to date, one can look with assurance as to the future oil supplies for our every need for thousands of years.

Gasoline distilled at atmospheric pressure from crude oil does not contain the hydrocarbon molecules of the type most useful to man. Some gasolines which nature produced have octane ratings as low as 15, and are worthless as motor fuels in modern cars due to high knocking characteristics. The crude oils and their gasoline content have to be converted into more useful products by thermal or catalytic cracking, polymerization, alkylation, aromatization, hydrogenation, and dehydrogenation.

The primary function of cracking is to produce high anti-knock gasoline. As a by-product of this operation, the oil industry has developed motor fuels of one hundred and higher octane ratings which make possible greater motor efficiencies whether in airplane or motor car engines.

The automobile industry during its early years gave indications of exceeding the capacity of the oil industry to supply gasoline. This thought spurred technical men to invent means for increasing the yield of gasoline from crude oil. The cracking process not alone provided the means for more than doubling the yield of gasoline, i.e. twenty-one per cent to forty-five per cent of the crude oil, but in addition improved the anti-knock properties of the gasoline.

In the past twenty years the number of motor vehicles has increased from about 9,000,000 to more than 31,000,000, while the motor fuel consumption increased annually from 109,000,000 barrels to over 566,000,000 barrels. In addition, the average motor compression ratio increased from 4 to 6.4. This is of tremendous significance from an economic standpoint in that motor efficiencies have increased more than forty per cent during this period.

Transportation speeds in the air and on the road have more than doubled, which is primarily due to the correspondingly improved anti-knock value of the gasoline and better motor design. Pursuit planes of our Army and Navy powered by one hundred octane fuel have speeds of over four hundred miles per hour.

About twenty-seven years ago, the first commercial cracking units went into operation at the Standard Oil of Indiana Whiting plant, using shell stills having a capacity of about two hundred barrels of gas oil per day with a yield of about thirty per cent. Today, a single topping and cracking unit with polymerization of the cracked gases treats more than 30,000 barrels a day of crude oil with yields of over seventy per cent of seventy octane gasoline from crude oils derived from East Texas. The cost of such a unit is about $2,000,000 whereas the early shell still cost about $20,000.

Modern cracking installations have been highly flexible since the introduction of multiple heating coils in equiflux furnaces wherein the time, temperature, and pressure conditions may be maintained to a nicety. Two-day runs were the maximum in shell-still operation, whereas the modern installation—composed of heaters, reaction chamber, flash chamber, fractionator, coolers, and stabilizer—operates continuously for months at a time, producing motor fuel, furnace oil, tractor fuel, fuel oil, and gas oil, or gasoline, gas, and coke.

The early shell stills (1913) used cracking temperatures around 740° F. and 75 pounds per square inch. Today temperatures ranging from 900 to more than 1,100° F. and more than 1,000 pounds per square inch obtain. The yield of gasoline from gas oil was about thirty per cent with octane rating of sixty; today, units operating on the same type of gas oil produce more than seventy per cent of motor fuel with seventy four octane rating.

The increasing number of high-compression motors has made straight-run gasoline no longer suitable as fuel. Cracking or reforming of the gasoline is necessary to produce hydrocarbons of structures which possess greater anti-knock properties. In order to convert the knocking gasolines into non-knocking types, it is desirable to subject the gasoline to temperatures of the order of 1,025° F. and 750 pounds per square inch. This is accomplished by pumping straight-run gasoline through a heating coil more than a mile long distributed in a furnace, until the temperature and pressure are raised to convert the hydrocarbons into high anti-knock gasoline. Under these temperatures of a 1,000° F. or more and pressures of 1,000 pounds per square inch, there is a molecular rearrangement and change in the structure of the hydrocarbons from the straight-chain paraffinic type to branched paraffins, olefins, aromatics, and naphthenes. These hydrocarbons burn without detonation in the high-compression motors of today.

It was recognized that thermally cracked gasoline was approaching a limit from the anti-knock quality standpoint. The octane number averaged about seventy as produced from gasoline, naphthas, or heavy oils. Hence, catalytic cracking processes have been developed to increase the octane rating and yields above that of thermal. Catalytic cracked gasoline of eighty octane has been produced from gas oil with yields of eighty-five per cent on a recycle basis. Catalytic cracking will be an adjunct to thermal cracking for some time to come. An important part of the catalytic cracking process is the quality of the gas produced since the percentage of olefins present is generally more than double that of thermal cracked gas.

The gases produced from the cracking process amount to over 350,000,000,000 cubic feet a year. These hydrocarbon gases were burned under stills and boilers. But these gases contained olefins such as ethene, propene, butenes, and the corresponding paraffins—ethane, propane, and butanes. Several processes were developed to convert cracked gases into high octane motor fuel via high temperatures and pressures while the catalytic process using solid phosphoric acid operates at low temperatures and pressures.

There are over 80 U.O.P. catalytic polymerization units in commercial operation, design, or under course of construction at the present time. The capacities of these units processing cracked gases range from 125,000 cubic feet to 27,000,000, or on a gasoline (81 octane) production basis, from eighteen barrels to over two thousand five hundred barrels daily. The combination of selective catalytic polymerization and hydrogenation units produce from fifty barrels to eight hundred barrels of isooctane gasoline per day. The increased yield of gasoline ranges from two to eight per cent with an octane number rise of one to two on the refinery gasoline output when processing naphtha, kerosene, gas oil, or topped crudes.

The butane-butene fractions from either the cracking or dehydrogenation process may be catalytically polymerized to yield isooctenes, and upon hydrogenation, isooctanes of ninety-five to one hundred octane rating. The conditions for the manufacture of isooctane require temperatures of 250° to 350° F. and approximately 750 pounds per square inch with solid phosphoric acid as the catalyst. Debutanization and re-running of the polymers is carried out and finally catalytic hydrogenation with nickel yields an aviation gasoline of ninety-seven octane rating. The potential yearly production of polymer gasoline is

over 300,000,000 barrels derivable from refinery and natural gases.

For years it was believed impossible to react a paraffin with an olefin hydrocarbon, due to the so-called unreactiveness of the paraffins. A new page in organic chemistry has been written based upon the alkylation of isobutane with ethylene, propene, and butenes by a number of methods such as aluminium chloride, boron fluoride, sulfuric acid, and at high temperatures and pressures. The latter two processes have gone into commercial use in the past year and are an exceedingly important contribution to high octane aviation gasoline. These two processes produce products having about ninety-five octane rating and high tetraethyl lead susceptibility. The thermal alkylation process operates best when using charging stocks made up of isobutane and ethene, producing therefrom 2, 2-dimethylbutane or neohexane, whereas the sulfuric acid method functions best on isobutane and butenes, forming isooctanes. When all the alkylation units under design and construction, as well as those in operation, are functioning, about 4,000,000 barrels of high anti-knock aviation gasoline will be produced annually.

Military airplanes, in 1928, used gasoline of about sixty octane rating while three years later, the standard Army aviation gasoline was eighty-seven octane. Airplane engines were developed to utilize this fuel which gave a thirty-three per cent increase in power per unit weight compared to sixty octane gasoline. Engines designed for using one hundred octane gasoline produced thirty per cent greater power output compared to eighty-seven octane, while take-off distances were reduced twenty per cent and climbing speed increased forty per cent. For transport planes, the advantage of one hundred over eighty-seven octane gasoline in a 1,400 mile flight would be the dispensing of "1,200 lbs. of gasoline and carrying instead seven more passengers, or their equivalent weight in mail or freight."

Leadership in aviation gasoline, with higher speeds and comfort of airplanes, rests in the United States. Aviation gasoline of one hundred and higher octane can be produced in the United States in quantities to supply the airplane needs of the world, for civil and military use. A most significant factor in the development of one hundred-octane gasoline is that the overall efficiency of the airplane gasoline engine is about the same as that of the best Diesel airplane engine performance and in addition surpasses the Diesel in greater take-off and emergency power and flexibility in maneuvering the plane.

Although one hundred octane gasolines and higher are now used

only in airplanes, it will not be many years before the oil industry's researches will produce them at a price level for use in passenger, truck, and bus vehicles, and they will be sharply competitive with the best high-speed Diesel engine performance.

Dr. Graham Edgar stated: "The General Motors Corporation carried out an elaborate research project in which an automobile equipped with a valve-in-head engine was operated at a number of compression ratios and a number of gear ratios, using fuels which in each case were just capable of avoiding knock. Approximately sixty-nine octane fuel was required for the standard 5.25 compression ratio, about ninety-five octane for 8.0 compression ratio, and something better than one hundred octane for 10.3 compression ratio.

"The results were most striking, showing, for example, that at forty miles per hour, the miles per gallon improved from 12.5 at 5.25 compression ratio to 18 at 8.0 and 21 at 10.3. The average increase in economy, between ten and sixty miles per hour, is about forty-five per cent in going from 5.25 to 8.0 compression ratio under these conditions of constant performance.

"It is interesting to note that, if we take the average retail price of gasoline as nineteen cents per gallon, the driver of the 8.0 compression car could have paid 27.5 cents per gallon at no increase in cents per mile, which would give the refiner a margin of 8.5 cents per gallon above his regular costs of five cents per gallon with which to attempt to produce the ninety-five octane gasoline required by the high compression car. Certainly, such an achievement would appear to be well within the eventual possibilities of the refinery technologist."

The volume of one hundred octane gasoline potentially available yearly in the United States are greater than the volume of all gasolines now being produced. One prolific source which has been tapped recently is natural and refinery gases. From these gases alone 8,345,000,000 gallons of eighty-one octane or 3,275,000,000 gallons of ninety-two octane, unleaded, gasolines are available. About 6,000,000,000 gallons of one hundred octane aviation gasoline are available yearly when the ninety-two octane is blended with isopentane and neohexane and light ends from some crudes plus tetraethyl lead. This volume of aviation gasoline does not take into consideration the vast volumes of aviation stock which are potentially available from catalytic reforming and cracking.

The development of catalytic dehydrogenation of gaseous paraffins

to olefins and hydrogen has made possible their utilization for polymerization to gasoline and chemical derivatives. Thermal cracking of paraffin gases is a competing source of olefins; however, catalytic dehydrogenation gives a better yield of the desired products than the thermal method. Catalytic dehydrogenation of ethane, propane, and butanes is highly selective, in that side reactions are suppressed. Catalysts for dehydrogenation reactions are oxides of the metals of the fourth, fifth, and sixth group of the periodic system, the most important one being chromium oxide and alumina. This catalyst is highly selective and converts the paraffin to the corresponding olefin in about eighty-five to ninety-five per cent of theoretical.

Butane may also be converted into butadiene by a two-stage catalytic dehydrogenation process. This compound is extremely important for use in synthetic rubber production. Butadiene is available potentially in the U. S. at the rate of more than 160,000,000,000 pounds yearly.

There is a very beautiful reaction called cyclization of paraffin hydrocarbons; i.e. catalytically converting normal hexane, heptane, and octane into benzene, toluene, and xylenes respectively, with hydrogen as a by-product and almost theoretical yields.

The lower-boiling hydrocarbons in petroleum, particularly those from the Pennsylvania, Mid-Continent, Michigan, East Texas, and Kettleman Hills, California fields, and gasoline from natural gas, are predominantly straight-chain paraffin. By catalytic cyclization at 932° F. and atmospheric pressure, these hydrocarbons may be converted into the corresponding aromatics which have been obtained heretofore chiefly from coal carbonization.

As of today, the aromatic hydrocarbons are not so good for airplane use, although some tests indicate that they will become useful. They are excellent blending hydrocarbons for increasing the octane rating of gasolines.

Benzene, toluene, and xylenes are most important for motor fuel use and as basic material for high explosives such as picric acid, T.N.T., and trinitroxylenes. The oil industry can produce any conceivable amount of these hydrocarbons from catalytic cyclization or aromatization of gasoline, the cracking process, and dehydrogenation of ethane. In 1940, about 26,000,000,000 gallons of gasoline will be produced in the United States. If the demand were present, our gasoline output could be increased to over 40,000,000,000 gallons in a short time. Based on this year's gasoline production alone, and using but twenty per cent of

the gasoline, the United States could manufacture (naturally requiring some time to go into full production) about 33,000,000,000 pounds of picric acid, about 27,000,000,000 pounds of T.N.T., and 25,000,000,000 pounds of trinitroxylene. The 85,000,000,000 pounds of high explosives which are potentially available from gasoline are all present within the shores of the United States and for many years to come.

In the world war now going on, difficulty will be experienced in obtaining natural rubber for our own needs. It is reported that the United States has but a three months' supply of natural rubber. Some suggestion has been made to plant rubber trees in a South American country such as Brazil. It would require at least ten years to obtain rubber in this way. Benzene and ethylene through alkylation and dehydrogenation yield styrene, a starting hydrocarbon for synthetic rubber manufacture. Butadiene is another hydrocarbon which can be readily produced and converted into synthetic rubber or may be co-polymerized with styrene. This latter type of synthetic rubber has about thirty per cent greater wear quality and strength in tires than natural rubber. The United States has potentially available enormous quantities of these hydrocarbons and other substances which can be converted into synthetic rubbers. In 1939, about 1,100,000,000 pounds of natural rubber were used in this country. Over 200,000,000,000 pounds of synthetic rubber could be produced from ethylene from the cracking process, benzene from cyclization, and butadiene from the dehydrogenation of butane. A unit to produce 10,000 pounds a day of synthetic rubber from butadiene derived from petroleum is being installed.

The United States is more than self-sustaining in motor fuels and aviation gasoline of 100 octane and above. The United States can produce billions of pounds of explosives for any necessity that may arise and still have more than sufficient gasoline for any form of transportation on land, air, or sea. The United States can also be more than self-sustaining in synthetic rubber from its own vast hydrocarbon resources.

The September issue of THE CHEMIST will start a series of articles, entitled "Teacher and Pupil: The Nef Line of Chemists", by Ed. F. Degering, F.A.I.C., of Purdue University. There is real inspiration here for all teachers of chemistry, and the chemists themselves will be enthusiastic about the informative biographies.

Dr. Gustav Egloff
Colonel George A. Burrell

Photo by Murphy
Dr. Robert P. Fischelis speaking before the Annual Meeting.

Dr. Robert J. Moore
Dr. Maximilian Toch

Annual Meeting of The American Institute of Chemists

May 18, 1940

The eighteenth annual meeting of The American Institute of Chemists was held on May 18, 1940, at the Claridge Hotel, Atlantic City, N. J., with an unusually large attendance of enthusiastic chemists, their friends, and wives.

Reports of the various Committees and Chapters were given during the business meeting in the afternoon, followed by a talk by Dr. Robert P. Fischelis, secretary and chief chemist of the New Jersey State Board of Pharmacy, and

member of the New Jersey State Board of Health. His subject was "The Status of the Chemist under the New Food, Drug, and Cosmetic Laws."

The medal of The American Institute of Chemists was presented to Dr. Gustav Egloff at a banquet given in the evening. Colonel George A. Burrell, president of the Atlantic States Gas Company, spoke on the medalist. The presentation was made by Dr. Robert J. Moore. Dr. Egloff's acceptance address appears in this issue of THE CHEMIST.

The following new officers were elected: President, Dr. Harry L. Fisher; vice-president, Dr. W. T. Read; secretary, Mr. Howard S. Neiman; treasurer, Mr. Walter J. Murphy; and councilors, Dr. E. R. Allen, Mr. Frank G. Breyer, and Dr. Charles N. Frey.

Souvenirs for the Annual Meeting were contributed by Bakon-Yeast, Inc., Carbide and Carbon Chemical Corporation, Jean Jordeau, Inc., Philip Morris and Company, Ltd., McKesson and Robbins, Inc., and Shulton, Inc.

Mrs. Hans Z. Lecher
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Dr. J. W. E. Harrisson

The Young Chemist and the Government Service

By **Louis Marshall, F.A.I.C.**

The thirteenth of a series of articles on the opportunities for chemists in the Government Service.

Bureau of Engraving and Printing

EVERY American must, at one time or another, have marveled at the technical perfection which is apparent in the money bills issued by the Government. All of these certificates which skilled counterfeiters find so difficult to reproduce, as well as the bonds, treasury notes, postage stamps, and diverse valuable documents are executed by the Bureau of Engraving and Printing of the Treasury Department. The plant in which this work is carried out is located at 14th Street between C and D Streets Southwest in Washington, D. C. An indication of the volume of work accomplished by this plant can be afforded by a few figures. In one year silver certificates of various denominations, having a total value of more than one billion dollars, were produced, as were 137,265,788 sheets of postage stamps, and 2,487,500 sheets of United States saving bonds. The institution is one of the most efficient of its kind in the world, and no small part of its success is due to the rigid control maintained by its chemical laboratory.

The laboratory is excellently equipped for conducting analyses on the materials needed for this type of work. One of the most important of these materials is the specially prepared paper used for printing currency and other Government securities. This paper is made under exacting specifications and it is tested chemically, physically, and microscopically to determine its suitability. The exact specifications governing the purchase of this distinctive paper are not a matter of public record. It is known, however, that its stock content is seventy-five per cent linen and twenty-five per cent cotton fibers. In addition, the paper has small segments of red and blue fibers which are incorporated into its body, while it is in the process of manufacture, and which are evenly distributed throughout. The presence of these silk fibers gives to the paper its truly distinctive quality.

The Bureau makes its own inks which are of a very fine quality and

which also are tested thoroughly before use. Other items which require analyses are dry colors, animal and vegetable oils, glue, textiles, and various metals. All of these materials are produced under definite specification requirements. The work of the chemical laboratory is carried out by one senior chemist and one associate chemist, assisted by several scientific aides.

Alcohol Tax Unit

The Alcohol Tax Unit, which is part of the Internal Revenue Bureau of the Treasury Department, operates sixteen laboratories; the central one in Washington, D. C., and fifteen in various cities of the United States. The functions of these laboratories are the analyses of products involving internal revenue taxes, such as alcoholic beverages, the examination of samples of narcotics in connection with violations under the Harrison Narcotic Act, and research investigations of problems arising during the course of the work. The laboratories play an important rôle in determining the taxes to be placed on various alcoholic liquors, and other products as, for example, narcotics and oleomargarine. These taxes are an important source of revenue to the Government, amounting, in the fiscal year of 1938, to $567,978,602.

The Bureau has an enforcement division which investigates and prevents the willful and fraudulent violations of internal-revenue laws relating to distilled spirits, wines, and fermented malt liquors. In one year, 15,629 stills were seized having an aggregate mash capacity of about two and one half million gallons. An interesting sidelight on this enforcement work is the fact that research men of the Bureau are trying to work out a method for the detection of yeast cells in the air. Since yeast is necessary in the production of alcohol by fermentation, such a method would probably be of assistance in locating moonshine plants.

The laboratories of the Alcohol Tax Unit examined, during the course of a year, about 85,000 samples of such products as distilled spirits, fermented liquors, mashes, denatured alcohol, and the denaturants themselves, toilet preparations, flavoring extracts, medicinal preparations, narcotic drugs, and fats and oils.

Analyses are also made of the alcoholic content of mashes in industrial alcohol plants. The purpose of this work is to check the amount of alcohol reported as produced by these plants, against the theoretical yield of alcohol which can be calculated. This procedure reveals whether or not any illegal removal of the product is occurring.

The variety of products submitted for examination affords the chemists an unusual opportunity of becoming familiar with many different methods of analysis. The chemists are often sent out to inspect industrial alcohol plants, distilleries, breweries, etc., to make reports on the technical conditions which obtain in these places. When they are sent out on inspection work to distant points, they receive their traveling expenses and living expenses in addition to their regular salaries.

One of the research problems on which chemists are continually engaged is the development of new and more efficient denaturants for alcohol. The object of this work is to make it impossible, or at least as expensive and difficult as possible, to take such products which are produced in tremendous quantities for American industry and convert them into alcohol suitable for beverage purposes. In one case, for example, the illicit production of alcohol from ethyl acetate was effectively checked by requiring the addition of calol ethatate as a denaturant for the latter. When new and more efficient formulas are worked out for the denaturation of alcohol, they are made official, and the old denaturing formulas are revoked.

To illustrate, one regulation of the Bureau of Internal Revenue prescribes that specially denatured alcohol, formula 23 G be compounded as follows: To every 100 gallons of ethyl alcohol, add 3.5 gallons of methyl propyl ketone and 0.5 gallons of methyl isobutyl ketone. This particular grade of denatured alcohol is used in the manufacture of rubbing alcohol compounds. In the preparation of one gallon of the compound, 98.1 fluid ounces of specially denatured alcohol, formula 23 G, and ½ ounce of sucrose octa-acetate are added to 29.9 fluid ounces of water. In addition, the manufacturer may add such odorous constituents or medicaments as are desired, provided they are shown in the formula submitted to the Bureau for approval. Furthermore, the finished product must contain not less than 70 per cent by volume of absolute alcohol. The bottle containing the rubbing alcohol must bear a caution notice to the effect that the preparation is intended for external use only, and is so compounded that serious gastric disturbances will result if taken internally.

This formula in turn was recently amended to permit the use, alternatively, of acetone and methyl isobutyl ketone as denaturants.

In connection with the work on narcotic drugs, a rather unusual investigation is being carried out. It has to do with the problem of determining whether race horses have been stimulated with narcotics or

other drugs. An effective method has not yet been achieved, but satisfactory progress is being made.

Another research problem of considerable magnitude and importance is the determination of the nature and composition of the congeners in whisky which are formed during fermentation and storage. The purpose of this investigation is to gain more knowledge of the substances which form during the aging of whisky, and this in turn will lead to improved methods for determining whether the whisky on the market is genuine or illicit.

From this brief description of the laboratories of the Alcohol Tax Unit, it is apparent that the work is important both from the standpoint of revenue collected, and from the standpoint of research. Fifty-four chemists are employed in the laboratories of this branch of the Government service. They are distributed among the grades as follows: two principal chemists, three senior chemists, fifteen chemists, eleven associate chemists, nineteen assistant chemists, and four junior chemists.

James Harvey Ransom

It is with deep regret that we record the death of James Harvey Ransom, on May 30, 1940, at Decatur, Illinois.

Dr. Ransom was born in New York, N. Y., on September 21, 1861. He received two degrees from Wabash College and the Ph. D. degree from the University of Chicago. He taught successively at Wabash College, Chicago Manual Training School, the University of Chicago, Purdue University, and Vanderbilt College, until 1919, when he became a research chemist at Michigan Smelting and Refining Company. In 1921, he left to accept a position as head of the Department of Chemistry at James Millikin University where he remained until his death.

He was the author of many books and publications, including chemistry textbooks and research articles in the field of metals. He was a member of the American Chemical Society, the American Institute of Chemical Engineers, the Institute of Metals (London), and the Illinois and Indiana Academies of Science. He joined The American Institute of Chemists in 1939. He is survived by his wife.

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He was the author of many books and publications, including chemistry textbooks and research articles in the field of metals. He was a member of the American Chemical Society, the American Institute of Chemical Engineers, the Institute of Metals (London), and the Illinois and Indiana Academies of Science. He joined The American Institute of Chemists in 1939. He is survived by his wife.

Charles L. Rand

It is with deep regret that THE AMERICAN INSTITUTE OF CHEMISTS records the death of Charles L. Rand, a Fellow of the INSTITUTE since 1931, at his home in Brooklyn, N. Y. on March 12, 1940, after a long illness.

He was born in Brooklyn on July 18, 1882, and was graduated from Cornell University. Following his graduation, in 1904, he served as research chemist and analyst for E. I. du Pont de Nemours and Company and General Chemical Company until 1907, when he entered the chemical manufacturing firm of his father, Lyman M. Rand, the Mitchell-Rand Manufacturing Company, at 18 Vesey Street, New York, N. Y. where he was director of research. He specialized in tar, pitch, and wax research.

Mr. Rand was a member of a number of organizations, including The Chemists' Club, the American Chemical Society, and the Society of Old Brooklynites. He is survived by his wife, his mother, and five sisters.

Jere K. Ross

The American Institute of Chemists records with deep regret the death of Jere K. Ross on May 15, 1940.

He was born on February 6, 1899, in Mauch Chunk, Pennsylvania, and was educated at Lafayette College, Easton, Pennsylvania, from which he received the M.S. degree in 1924. Following his graduation, he spent more than a year as an analytical chemist for the Barrett Company, and then worked for several years as a chemist in charge of the technical department of the Edel Laboratories in Newark, N. J. In 1928, he was employed as chemist in charge of laboratory and research for the Wailes Dove-Hermiston Corporation, New York, N. Y., where he remained until his death. His experience was widely diversified, although he considered himself particularly informed on the subjects of fuels, gas, tar, and coke.

He was a member of the American Chemical Society and of Alpha Chi Sigma. He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1926. He is survived by his wife.

Paul De Meritt Buckminster

It is with deep regret that THE AMERICAN INSTITUTE OF CHEMISTS records the accidental death of Paul De Meritt Buckminster on March 27, 1940, at Grand Rapids, Michigan.

Mr. Buckminster was born September 9, 1889, at Georgetown, Massachusetts. He received the B. S. degree in chemical engineering from the University of New Hampshire. From 1913 to 1922, he was employed as production manager by E. I. Du Pont de Nemours and Company of the Boston plant of the former New England Oil, Paint and Varnish Company, followed by three years of miscellaneous experience with several varnish manufacturers. From 1925 to 1931, he was superintendent of the Martin Varnish Company, and from 1931 to about 1939, he acted as general superintendent and director of research of the General Paint Corporation of San Francisco. At the time of his unfortunate death, he was employed by the Phelan Faust Manufacturing Company of St. Louis, Missouri.

He specialized in plant management and technical control, and was the author of several articles on china wood oil and cost accounting problems in various trade journals and technical magazines. He was also the author of a "Cost Accounting Manual for Varnish Manufacturers." He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1937.

One Natural World

Sir William Bragg, president of the Royal Society of London, recently made a plea for a recognition of the interrelation of all branches of science to be applied to the solution of problems in any given field. "Science, that is to say, the knowledge of nature, is of fundamental importance to the successful prosecution of any enterprise . . . Science is of general application. There are not one science of chemistry, another of electricity, another of medicine, and so on . . . There is only one natural world, and there is only one knowledge of it.

"Experience shows that an advance in knowledge or technique or skill in any direction may be based on some item of knowledge acquired in a far distant field of research. For that reason, it is necessary to resist strongly a natural tendency for those who study science or apply it, to separate into groups without mutual communication."

Reports to the Annual Meeting of The American Institute of Chemists For year ending April 30, 1940.

Report of the Secretary

I am pleased to submit this report of the activities of THE AMERICAN INSTITUTE OF CHEMISTS during the season 1939-1940.

The National Council held nine meetings during the year with an average attendance of ten councilors.

The following actions upon the membership were taken:

Elections

Fellows	166
Associates	13
Juniors	37
Students	1
Total	217
Reinstated (Fellows)	3
Total Increase	220

Loss of Membership

Resignations

Fellows	32
Associates	1
Juniors	2
Students	0
Total	35
Dropped (Fellow)	1
Total	36

Deceased

Fellows	7
Students	1
Total	8
Total Loss	44
Net Increase	176

Actions

Fellows to Life	4
Associates to Fellows	4
Juniors to Fellows	2
Juniors to Associates	2

Total Membership

	May 1939	May 1940
Honorary	7	7
Life	3	7
Fellows	1201	1332
Associates	104	114
Juniors	135	166
Students	8	8
Total	1458	1634

I regret to make note of the following deaths during the season:

F. K. Bezzenberger
Hall Canter
Frederick D. Crane
Max Grunbaum
Ingo W. D. Hackh
Joseph F. X. Harold
Joseph John Kalisz
Neil Preston Moore
Charles L. Rand

Notwithstanding the continued unemployment situation in the chemical professional field, a greater number of members was elected this season than during the season of 1938-1939, and the present total membership is the largest in the history of the INSTITUTE, due largely to the energetic efforts of the Committee on New Members, of which Professor W. T. Read is chairman.

It is to be noted that the present improved financial condition of the INSTITUTE reflects this increase of membership and the increased subscription returns of THE CHEMIST.

The reports of the president, the chapters, the various committees, and the editor of THE CHEMIST will indicate the wide activities of the INSTITUTE and need not be repeated.

It is again a great pleasure to me to thus publicly express my appreciation of the valuable and loyal service of my assistant, Miss V. F. Kimball, both in her assistance to me as secretary and in her capable capacity as editor of THE CHEMIST.

Respectfully submitted,
Howard S. Neiman, *Secretary.*

Treasurer's Report
Schedule of Income and Expenses
for the Year Ended April 30, 1940

INCOME

Members Dues, 1939-1940		$7330.00
Less Reserve for Chapter Refunds	423.18	
Net Income from Dues		$6906.82
THE CHEMIST Publication Income from Advertising	$ 960.50	
Income from Subscriptions	2714.86	
Gross Income		$3675.36
Less cost of Publishing	2266.14	
Net Income from The Chemist		1409.22
Total Income for the Year		$8316.04

EXPENSES

Office Rent	$ 600.00
Office Light	27.84
Office Salaries	2432.50
Social Security Taxes	24.33
Other Taxes	1.00
Student Medals	49.35
Stationery & Printing	383.38
Postage	349.30
Telephone & Telegraph	107.74
Membership Expenses	500.36
Secretary Expenses	40.86
License Committee Expenses	31.08
Council Meeting Expenses	71.20
Accounting	100.00
Chemists Show Expenses	48.96
Contribution Chem. Advis. Council	50.00
Reserve for Delinquent Dues, Written Off	711.50
General Expenses	44.30
Annual Dinner Expenses	122.96
Total Expenses for Year	5696.66

NET INCOME FOR YEAR ENDED APRIL 30, 1940 $2619.38

Auditor's Report—1939-40

May 9, 1940.

The American Institute of Chemists,
233 Broadway,
New York City, N. Y.

Gentlemen:

In accordance with your instructions, I have audited your books and records for the fiscal year ended April 30, 1940, and submit herewith a Balance Sheet as at that date together with a statement of Income and Expenses for the year and a statement of Cash Receipts and Disbursements.

Cash in the Public National Bank was verified by reconciliation with the bank statement and satisfactory vouchers were presented for all items under audit. Dues receivable from members for the current and prior years amounted to $2827.00 against which there was set up an arbitrary reserve of 50 per cent for bad and delinquent accounts. Due for subscriptions amounted to $482.00 and for advertising $350.00.

The excess of income over expenses for the year amounted to $2619.38. (This compares with a net income of $387.16 for the previous year.) Included in the net income is an amount of $1409.22 which represents the profit of THE CHEMIST publication.

The Surplus Account on April 30, 1940 was $4739.47 and reflects an increase of $2619.38 for the year. This increase is the amount as shown in the schedule of income and expenses.

Your total membership increased from 1458 on April 30, 1939, to 1634 on April 30, 1940, as indicated by the schedule of membership changes.

In my opinion, the Balance Sheet submitted herewith, and the related statements of Income and Expenses together with accompanying schedules, correctly present the financial position of THE AMERICAN INSTITUTE OF CHEMISTS on April 30, 1940, and are in accordance with the books and records.

Respectfully submitted,
JACOB A. LICHTENFELD,
Auditor.

Report of the Committee on Membership Classes

Your Committee on Membership Classes has studied the problem very thoroughly. We recommend that the classes of Student and Junior members be dropped. We feel that the very nature of THE AMERICAN INSTITUTE OF CHEMISTS is contradictory to the idea of Student and Junior membership. The INSTITUTE is a professional organization supposed to be made up of competent and experienced members of the chemical profession. An Associate Member has all the educational qualifications of a Fellow except experience; is likely to remain in the profession; and is usually transferred in time to the status of Fellow.

In order to avoid any injustice, we recommend that the Council immediately cease to elect Student and Junior members; that an amendment to the Constitution be proposed and submitted dropping these two classifications after a certain date; and that all present Student and Junior members be given an opportunity to qualify as Associates as soon as possible.

Respectfully submitted,
W. T. Read, Chairman.
M. L. Crossley.

Report of the Committee on Membership

Your Committee on Membership has sent out nearly 2500 letters during the past year. Of these, 750 were to research directors asking that they make information regarding the INSTITUTE available to chemists on their staffs.

More than 50 of our committee have either written or personally interviewed chemists in their territory relative to membership; supplementing letters from the office of the chairman.

Faculty members to the number of 17 have recommended former graduates.

Several applications have been sent in through chapters and members of the INSTITUTE, aside from the regular activities of this committee.

The increase in membership for the past year has been substantial and gratifying.

Replies from those who did not become members make evident the desirability of electing a larger number of Associates who have the necessary educational qualifications and at the same time who have not yet become so involved in other duties as to leave too little time for the work of the INSTITUTE.

The value of the strong support of members of the INSTITUTE in interesting and proposing new members can not be too strongly emphasized.

Respectfully submitted,

W. T. Read, Chairman.

Report of the Committee on Licensing—1939-1940

Your committee on this item reported at the last annual meeting of the INSTITUTE in regard to a proposed draft for a bill to be considered upon the above matter. As the immediate interest of the INSTITUTE was concerned with a bill proposed to be introduced into the New York Legislature, your general committee chairman requested that a sub-committee be appointed to consist entirely of members resident or practicing in New York State. It was the opinion of your chairman that by such action more could be accomplished, and in a manner which would be representative of the wishes of those within the State.

Accordingly, a sub-committee was appointed with Dr. Foster D. Snell as chairman, with authority to undertake such actions as they deemed advisable and without the necessity of obtaining the authorization of the general committee, unless major issues might be involved.

The report of the sub-committee chairman, Dr. Snell, and the members of that committee, Drs. Toch and Kirk, is submitted separately, although made a part of this general report.

It is well that we consider what has occurred within recent months that may be influencing factors upon our further actions or our opinions upon the subject.

Chemists, especially those trained in bio-chemistry, have for years practiced the application of this science to medicine. Against these men a direct frontal attack has been made. This constitutes an assault against chemists in general, for to deny the ability or rights of one group, no matter how small that group may be, is to question the inheritance of all. Chemists, or those trained in chemistry, if we desire to distinguish, have been adjudged incompetent to act as directors of laboratories wherein serological tests were performed notwithstanding the fact that such tests are physical or colloidal functions, in both of which

the chemist receives fundamental training.

This trespass against the basic principle and right to practice the profession in which one has been trained, springs not from a purely philanthropic desire on the part of those advocating it. It is fomented by a small group who unfortunately are physicians. This group advocates that only those trained in medicine are competent, sufficiently interested in the welfare of our fellows, and legally responsible, and so espouse placing in their hands the sole right for directing such investigations. Their aggressiveness has led to the adoption of such a position by at least two State Boards of Health. One of their points of contention is that medical men are adjudged as to their competency by law and examination, that any breach of practice will subject them to forfeiture of their right to practice, thereby assuring only the services of the competent to the ill.

This argumentative approach to Health Departments or any other governmental divisions, namely: that licensure and alleged judgment of competency by a board is a safeguard, often carries considerable weight. Especially is this true when such legislative divisions are closely affiliated with the examining boards.

Chemists should therefore view this entire problem in a serious light. It is not solely a problem applicable to those practicing that division of chemistry now under attack. The relevance of the principle to others is equally forceable, namely, those engaged in the manufacture or control of foodstuffs or of medicinals, or in other phases of practice, where public health may be involved, as the various industrial hazards.

One can, without any difficulty, recall the earlier drafts of the Food, Drug, and Cosmetic Act in which provision was made for the acceptance of opinions only from various scientific experts who possessed licenses issued within the jurisdiction where trials of cases prevailed. All reference to such requirements were stricken in the final act as passed by Congress.

In the State of New York, by recent legislative enactment, the Board of Regents may define the "chemist". By indirect means, we may therefore find ourselves placed under quasi-legislative control, subject to restrictive definition without adequate representation or a voice in our own interest. This permissive function has not, up to the moment, been applied, nevertheless it remains a constant danger. The definition, when or if adopted, will refer specifically to chemists engaged in the manufacture or control of pharmaceutical products, as the legislation was the result of amendment to the Pharmacy Act.

These indefinite, yet potentially dangerous situations are but illustrative of the need for adequate consideration and thus necessitates the coöperation of all bodies interested in the welfare of the public through the service of chemistry.

It is your chairman's recommendation that further continued study be given with the committee assigned this obligation, having the authority to act upon approval of the Council.

Respectfully submitted,

J. W. E. Harrisson, *Chairman*

Report of Sub-Committee on Licensing of Chemists in New York State

This committee started the year 1939-40 with a bill which had been drafted the previous year. The following is an abbreviated outline of what transpired during the past legislative year.

The bill was introduced by Senator Esquirol and in the House by another representative, in neither case under the direct sponsorship of THE AMERICAN INSTITUTE OF CHEMISTS. It was therefore printed on February 7, 1940, as Senate Bill 1111, and at some similar date as a corresponding House bill.

A conference was held by your chairman and Dr. Maximilian Toch with Governor Lehman in regard to this bill. This could be summarized simply to the effect that Governor Lehman stated that he would not sign such a bill even though it were passed by the legislature unless he were advised by the Regents that it had their approval.

On February twenty-fourth, a conference was held with Dr. Milton E. Loomis, Associate Commissioner for Higher Education, at the Town Hall Club in New York. The summary of some two hours conversation can be very brief. The bill as drafted would have the opposition of Dr. Loomis who is in responsible charge of administration of such licensing acts. While he could not, of course, express the opinion of the Regents, a definite inference was obtained that the Regents would also oppose the bill in the form in which it stood at that time. There grew out of the conference the suggestion that licensing of chemists be handled by permissive legislation parallel to the way in which certified public accountants are registered. A draft of a proposed act pursuant to this suggestion was prepared.

At this point, therefore, the chairman who had been conducting these negotiations personally called a meeting of the licensing committee and presented this proposal to them for action on March nineteenth. The committee on licensure approved the proposed change. It was then presented to the Council at a subsequent meeting on the same day and also had the approval of the National Council.

The plan of the future schedule of the bill is as follows. It is expected that the present draft will be carefully gone over for revision by members of your committee during the summer. Fairly early in the fall it should be presented in draft form to Dr. Loomis and the members of the Board of Regents for consideration. As soon as the election is over and before the legislature convenes, it should be presented to the chairmen of the Committee on Education in the Senate and in the House for their consideration. It is hoped that it can be arranged that these chairmen will present it as their bill to the 1941 legislature which convenes immediately after the new year. Provided it has their blessing and provided there is no serious opposition, it should pass the 1941 legislature.

Your chairman has coöperated very closely with Dr. Charles L. Parsons in all of the above matters in the belief that it was only by coöperative rather than competitive effort that substantial and suitable accomplishment could ensue. Dr. Parsons was advised of each move either by letter or in some cases by telephone. Dr. Parsons, representing the

American Chemical Society, will be kept in close touch with the proposed bill and will be asked for suggestions as to any modification of the draft.

Your chairman is also chairman of a committee on licensure of the New York Section of the American Chemical Society and in that capacity has presented the proposed permissive legislation in principle. That committee has approved it in principle and will be furnished with copies of the proposed act when minor modifications have been made.

In conclusion, the chairman offers a limited apology to his associates on the committee. At times moves have been carried forward without consulting with other members of the committee. This has been because the chairman has become convinced by experience in the matter that after long delays, matters move very rapidly for a brief time and that under those circumstances one person must necessarily be prepared to proceed without the hesitations and delays inherent in bureaucracy. Such apology is limited by the statement that no important move has been made final nor will be made final without the approval of the other members of the committee.

Respectfully submitted,

Foster Dee Snell, *Chairman*
R. E. Kirk
Maximilian Toch

Report of the Committee on Professional Education

Because of a recent change in personnel in the committee, it has not been possible to get the new members together for a discussion of plans in any detail. For this reason no report is submitted at the present time. It is hoped that the Committee can take an active part during the coming year in stimulating discussion of the problems of professional education in chemistry. It is felt that the rapid development in the science of chemistry necessitates frequent changes in material and methods of education. We hope that conferences between representatives of the colleges and universities and of the industries may be fruitful.

Respectfully submitted,
D. H. Andrews, Chairman.

Report of the Inter-Relations Committee—1939-1940

The Inter-Relations Committee of the INSTITUTE was set up in December, 1939, to consider questions of dissatisfaction amongst the membership. Its particular function was to correspond with members who had submitted resignations, with a view of making sure that they were fully aware of the aims of the INSTITUTE and the reasons for particular INSTITUTE policies.

The resignations of fourteen members were referred to the Committee by the Council. To each of these members an appropriate letter was sent covering the aims and policies of the INSTITUTE and information was requested as to the cause of the dissatisfaction.

The replies received as well as investigations along other lines indicate that the principal source of dis-

satisfaction amongst the membership is the apparent absence of tangible return for dues paid. Either because the importance of standing shoulder to shoulder with the rest of their fellows in advancing the professional status of chemists has not been properly presented, or because they are not receptive to the idea, some members do not feel the need for belonging to their professional organization, if there is no immediately obvious return.

To meet this situation, your Committee makes two suggestions:

1. Organize chapters more rapidly. The talks arranged by a chapter not only offer tangible evidence of return on dues paid, but more important, a chapter is a focal point for the membership, licensing, ethics, employment and other professional work of the INSTITUTE in the locality. Indeed the Committee feels some of the dissident members are dissatisfied because they have nothing to do.

2. Include more spot news in the CHEMIST. At present the articles in our publication are largely of a general review nature which do not make the membership feel the bulletin is indispensable. Addition of material on current events, e.g. legislation affecting chemists, would give the CHEMIST greater appeal. Since at present no chemical publication attempts regular coverage of current legislation, inclusion of such a section in the bulletin would give members a monthly return for dues paid.

Since your Committee has not uncovered any unusual or unobvious causes for dissatisfaction, it does not recommend its own continuance.

Respectfully submitted,
Charles A. Marlies, Chairman.

Report of the Editor of THE CHEMIST

Members of the INSTITUTE have been informed in detail about the activities of the National Council, and of the various Chapters, a service which is essential to keep each member in close contact with his professional organization.

The material which has been submitted for publication has been of excellent quality and interest and has received many favorable comments from members as well as non-members. We have had requests from several publications to reprint some of this material because of its interest to related fields. Universities and libraries have requested complete files. Among the regular departmental contributors each month were: Messrs. M. R. Bhagwat, Louis Marshall, Howard W. Post, Kenneth E. Schull, Edward F. Snyder, and Miss Margaret Swisher. Many members have given enthusiastic coöperation by contributing news items and suggestions, which we are always glad to receive. Recently the suggestion was made that THE CHEMIST report Federal Legislative activities affecting chemists and the chemical profession. Perhaps these reports can be arranged to begin in the fall.

We are happy to report that income from subscriptions increased thirty-one per cent over that of last year, which includes many new subscriptions from non-members as well as members.

With a steadily growing subscription list of unusually qualified chemists, we recommend that manufacturers take advantage of our ex-

ceptional market and our low advertising rates to increase their sales.

May we express our deep gratitude to all who have contributed to THE CHEMIST by reports, articles, clippings, or in other ways; to the Chapter secretaries for their assistance; to the National Council for its able guidance; to President Moore for his contributions of material and for his encouragement; and particularly to Secretary Neiman for his kind coöperation and generous assistance.

Respectfully submitted,
Vera F. Kimball, Editor.

Report of the Committee on Unemployment

The Committee on Unemployment of THE AMERICAN INSTITUTE OF CHEMISTS kept in touch with the work of Chemist Advisory Council and reported its efforts in helping unemployed chemists and chemical engineers at every meeting of the National Council of the INSTITUTE held during the past year The members of the INSTITUTE were also informed of the activities of Chemist Advisory Council through the medium of THE CHEMIST.

Respectfully submitted,
Frank G. Breyer.
M. R. Bhagwat.

The Report of the Committee on Ethics

The committee during the year has had only one case to consider.

After a prolonged correspondence and survey of the facts a final report on this case was submitted to the National Council.

Respectfully submitted,
W. D. Turner, Chairman.

Annual Report of the New York Chapter—1939-1940

The New York Chapter has had an active year, punctuated by four very well-attended meetings on November third, January nineteenth, March first, and April twenty-sixth. A fifth meeting is scheduled for a date later than that of this report.

On November third, the Chapter held its opening meeting, which took the form of a testimonial dinner to the INSTITUTE's president, Dr. Moore. This meeting had as its features short addresses by Drs. Marston T. Bogert, Robert Calvert, William T. Read, Foster D. Snell, and Maximilian Toch, who discussed those phases of the President's career and accomplishments with which they were most familiar, and a longer address by Dr. Moore on the subject "Scientific Societies".

Dr. Walter S. Landis addressed the Chapter, on January nineteenth, on the subject "The Training of Chemical Executives". In his talk, Dr. Landis traced the progress of the future executive through either a training course in the plant or the normal career of the industrial chemist. On March first, Dr. J. C. Morrell discussed "The Chemist in the Petroleum Industry" and included in his remarks a discussion of the progress of chemistry in the problem of evolving new synthetic products from petroleum. Dr. Benjamin T. Brooks discussed "Chemical

nd Political Interests in the Tropical Colonies", at the April twenty-sixth meeting. The products of the tropical colonies and the imports of food and other raw materials by the United States from this source were considered.

The untimely death of one of the Chapter's Councilors, Dr. J. F. X. Harold, was recorded with regret in a memorial minute.

Respectfully submitted,

H. G. Lindwall, *Chairman.*

Report of Niagara Chapter—1939-1940

The chapter has held four meetings, including the usual summer social meeting for members and families. A fifth meeting is scheduled for May. These meetings have already been reported in THE CHEMIST. The subjects discussed at the meetings have been about equally divided between scientific subjects and those concerned with the professional life of chemists. As in other years, prospective members have been invited to attend most of the meetings.

The chapter has coöperated with Dr. Read of the membership committee by arranging personal interviews with chemists whose records qualify them for membership.

Interviews have been arranged with local industrial executives in order to obtain first hand knowledge of what qualifications were desired in chemist employees. It was emphasized that the chemist should approach his problems with an open mind, be thoroughly honest, and well able to express his findings clearly in writing.

Publicity was obtained for chemistry by arranging for a speaker on a popularized chemical subject at the local Museum of Science.

The licensing of chemists was again discussed at a chapter meeting and the consensus of the chapter summarized in motions carried unanimously by the members present to the effect that the chapter is in favor of establishing a legal definition of a chemist by a licensure bill, granting that no better means can be found. Transcripts of these motions were forwarded to the State assemblymen. In response to a request by the chairman of the Western New York Section of the American Chemical Society a letter was prepared for publication in the *Double Bond* (local section publication) setting forth arguments for licensing.

Respectfully submitted,

M. C. Taylor, *Chairman*

Report of the Pennsylvania Chapter—1939-1940

The following is the report of the Pennsylvania Chapter of THE AMERICAN INSTITUTE OF CHEMISTS for the current season:

The following programs were held as scheduled:

October 24. Dr. William S. Wadsworth. Subject: "What is Toxicology?"

November 21. Dr. Walter L. Obold. Subject: "Germicides."

January 30. Dr. Harry L. Fisher. Subject: "Synthetic Rubbers."

February 27. Dr. Raymond E. Kirk. Subject: "Research Frontiers in Inorganic Chemistry."

March 26. Dr. Ivor Griffith. Subject: "Dyestuffs and Disease."

April 23. Dr. Robert J. Moore. Subject: "The Activities of THE AMERICAN INSTITUTE OF CHEMISTS."

Dr. Frederick R. Greenbaum. Subject: "The Story of Allantoin."

The attendance at these meetings was very good, in fact, the attendance at the January meeting (70) broke the record.

We were represented on the Technical Advisory Council of the Philadelphia Chamber of Commerce by Dr. Seil, and on the Philadelphia Technical Service Council by Dr. Harrisson.

A campaign for new members is in progress.

Election of officers for the coming year has been held and the officers duly reported to the secretary.

Respectfully submitted,
Walter L. Obold, *Chairman*

Report of the Washington Chapter—1939-1940

Washington Chapter has had a busy and also a successful year.

The principal concern of the Chapter was the advancement of its Issues and Objectives program. This program is as follows:

(1) Draw up recommendations for civil service improvements as regards professional employees to be sent to the National Council, for its approval and for transmittal by the Council to the Reed Committee for Civil Service Improvement, which Committee was appointed by President Roosevelt.

(2) Draw up a questionnaire to be sent to all members of the Chapter in order to secure information relative to the economic and professional status of the membership. Also to secure suggestions and learn more concerning the needs of the professoin in order that future efforts of the Chapter and of the INSTITUTE may coincide with the wishes of the membership.

(3) Form a joint committee with other professional organizations to consider pending and proposed legislation, first as affecting professional civil service employees and possibly later as affecting other classes of professional employees outside of the civil service.

This joint committee to be composed of one representative from each profession such as the chemical, legal, medical, the various engineering, and other groups. It is expected that this committee will act in an advisory capacity to the various organizations that are represented, and while not having the power to commit any group to a course of action will permit the organizations to coördinate their efforts and to act concertedly if such action is considered necessary.

(4) Take steps to hold all present members and secure the prompt payment of dues.

(5) Build up the membership at least to the point where the increase will offset the exodus of members who are leaving Washington to accept positions with the U. S. Regional Laboratories.

(6) Development of interesting programs in order to stimulate attendance.

(7) Develop means of securing publicity of a dignified and ethical nature.

(8) Stimulate closer relations with the national organization of the AMERICAN INSTITUTE OF CHEMISTS.

While, to date, every item on this program has not been completely realized, sufficient progress has been made so that the membership feels that our program will shortly be

brought to a successful conclusion:

(1) The recommendations to the Reed Committe, suggested by our Chapter, were accepted by the National Council of THE AMERICAN INSTITUTE OF CHEMISTS and transmitted by it to the Reed Committee.

(2) The questionnaires were drawn up after discussing the matter with the U. S. Department of Labor. About fifty per cent of the questionnaires sent out to the members of the Chapter have been returned and are still being received. The data obtained will be statistically analyzed and the results will be submitted for publication in THE CHEMIST.

(3) The ground work has been laid for the formation of the joint committee of professional organizations. Letters of invitation to cooperate in forming this committee have been sent to nearly thirty professional organizations. To date favorable replies have been received from about fifteen organizations. It is hoped that the committee may be formed sometime in June.

(4)(5) Personal contacts, and the advising of members concerning accomplishments and of pending issues and objectives as well as reminders to "pay your dues!" "Secure a new member!" and "Attend Meetings" on announcement cards have been responsible for some success in carrying out objectives (4) and (5). Twenty-six new members have been added to the Chapter's roster.

(6) The following meetings and programs have brought objective (6) to a successful conclusion:

(a) Evening meetings:

(1) July 12, 1939, Wardman Park Hotel. No speaker. Meeting called to receive and act upon report of Chapter's Civil Service Improvement Committee.

(2) November 29, 1939, Wardman Park Hotel. Speaker, Paul D. Boone, on the subject "Value of Patent Protection to the Chemist and to the Chemical Industry."

(3) February 28, 1940, Wardman Park Hotel. Speaker, Dr. W. C. Lowdermilk on the subject "The Indelible Record in the Land of the Older Countries." Illustrated by motion pictures of the Mediterranean Countries.

(4) March 26, 1940, Annual Dinner Meeting with the National Officers, Wardman Park Hotel; guests of honor, Dr. Robert J. Moore, Dr. Donald H. Andrews and Dr. Henry G. Knight. Speakers, Dr. Robert J. Moore on matters of interest and importance concerning the national organization. Dr. Donald H. Andrews on the subject "Professional Education in Chemistry."

(5) April 23, 1940, annual Baltimore meeting. Inspection tour of Crown Cork and Seal Company's plant, followed by refreshments in the laboratory through the courtesy of Dr. Warth, chemical director of the Plant and vice-president of Washington Chapter. Dinner and meeting Emerson Hotel. Speaker Dr. A. H. Warth, concerning the history and processes of the Crown Cork and Seal Company's plant. Hotel arrangements were in charge of Dr. N. W. Matthews.

(6) One additional evening meeting is expected to be held some time in June. This meeting is for the purpose of electing new officers for 1940-41.

(b) Luncheons and Dinners:

(1) October 24, 1939, U. S. Department of Agriculture. Speaker, Colonel Haig Shekerjian on the subject "Chemical Warfare in National Defense."

(2) January 9, 1940, U. S. Department of Agriculture. Speaker, Mr. Watson Davis on the subject "The Public's Way to Science."

(3) March 26, 1940, annual dinner, Wardman Park Hotel.

(4) April 23, 1940, annual Baltimore dinner, Emerson Hotel.

(c) Committee Meetings:

(1) One Executive Committee Meeting was held at the beginning of the season and a number of meetings have been held by the Civil Service Improvement Committee and the Issues and Objectives Committee. Several of the other committees, such as the Auditing Committee, have held one or more meetings.

(7) The publicity secured has been derived from contact with the universities regarding the student medal awards, through newspaper notices of meetings and through letters sent to other organizations relative to the formation of the joint committee already mentioned.

Eight universities have been contacted relative to the student medal awards program; to date six have named recipients.

(8) Relations with the National Organization have been stimulated by the annual meeting and dinner, with national officers as guests of honor and as speakers. The sending of notices of meetings to the National Officers and to the various Chapters, and a cordial correspondence have also assisted in creating closer relationship with the National Organization.

The Auditing Committee reports as follows:

Balance from last year plus receipts	$63.26
Disbursements	47.03
Balance on hand May 8, 1940	$16.23

Several outstanding bills, the payment of which has been authorized, are still unpaid.

It is recommended that (1) the Chapter continue with the organization of the joint committee of professional organizations, (2) study the suggestions received in the questionnaires with a view to shaping the future activities to conform with the wishes of the membership, (3) continue the awarding of student medals and junior memberships in the universities, (4) build up the membership by securing members from the U. S. Bureau of Standards, Public Health Service, Interior Department, Geological Survey, etc. where employees are more likely to remain in the City of Washington than many of those employed by the U. S. Department of Agriculture.

In closing, I wish to express my thanks and appreciation to the national officers, and to the officers, committees, and members of Washington Chapter whose coöperation has made possible this very favorable report.

Respectfully submitted,

Frank O. Lundstrom, President.

COUNCIL

April Meeting

The one-hundred and seventieth meeting of the Council of The American Institute of Chemists was held on April 16, 1940, at The Chemists' Club, 52 East 41st Street, New York, N. Y.

President Robert J. Moore presided. The following officers and councilors were present: Messrs: J. W. E. Harrisson, B. H. Knight, C. A. Marlies, R. J. Moore, W. T Read, G. E. Seil, and F. D. Snell. Mr. M. R. Bhagwat and Miss V. F. Kimball were present.

The minutes of the previous meeting were read and approved.

The Treasurer's report, showing a bank balance as of April 16, 1940, of $2938.15, with no unpaid bills, was read and accepted.

Plans for the annual meeting and medal award were discussed.

Upon motion made and seconded, the student medalists of the Niagara Chapter were approved.

The colleges selected by the Pennsylvania Chapter for student medal awards were approved.

Dr. Read reported for the committee on Membership Classes, which advised that the Institute consider dropping the student and junior membership classes, and this sugestion was referred to the Annual Meeting for discussion.

The application of Matthew Carl Blume, A.A.I.C., to be raised to Fellowship was approved.

The applications of I. Mathew Berk and Helmut C. Diehl to be reinstated to Fellowship were approved.

The following new members were elected:

FELLOWS:

Averell, Philip R.
(1940), *Analytical Chemist,* American Cyanamid Company, Stamford, Connecticut.

Baker, William B.
(1940), *Director of Laboratories,* Sutliff and Case Company, Inc., Peoria, Ill.

Block, Richard J.
(1940), N. Y. State Psychiatric Institute and Hospital, 722 West 168th Street, New York, N. Y.

Brenner, Mortimer W.
(1940), *Chief Chemist,* Schwarz Laboratories, 202 East 44th Street, New York, N. Y.

Butcosk, Richard A.
(1940), *Analytical Chemist,* Gulf Research and Development Company, Harmarville, Penna.

Cifelli, Thomas, Jr.
(1940), *Research Organic Chemist, Attorney,* Givaudan-Delawanna, Inc., Delawanna, N. J.

Cook, Elton S.
(1940), *Research Professor,* Institutum Divi Thomae, Athenaeum of Ohio, Mount Washington, Cincinnati, Ohio.

Conroy, Peter J.
(1940), *Professor,* School of Pharmacy, Fordham University, New York, New York.

Cosgrove, John F.
(1940), *Owner,* Cosgrove Clinical Laboratory, Newark, N. J.

Dittmar, John H.
(1940), *Chemist, Assistant to Technical Director,* Pennsylvania Sugar Company, Philadelphia, Penna.

Eheart, James F.
(1940), *Assistant Chemist,* Virginia Agricultural Experiment Station, Blacksburg, Va.

Fischer, Martin
(1940), *Professor of Physiology,* College of Medicine, University of Cincinnati, Cincinnati, Ohio.

Gardiner, Robert F.
(1940), *Assistant Chemist,* U. S. Department of Agriculture, Fertilizer Research Laboratory, Arlington, Va.

Gilmour, C. H.
(1940), *Research Chemist,* Hall Laboratories, South Charleston, W. Va.

Ginnings, Paul M.
(1940), *Professor of Chemistry and Physics,* Greensboro College, Greensboro, North Carolina.

Grebe, John J.
(1940), *Director of Physical Research,* The Dow Chemical Company, Midland, Michigan.

Greenbaum, Frederick R.
(1940), *Director of Pharmaceutical Research,* The National Drug Company, Philadelphia, Penna.

Hampton, Burt L.
(1940), *Research Chemist,* G. and A. Laboratories, Inc., Savannah, Ga.

Hermanson, J. L.
(1940), *Professor,* Bethany College, Lindsborg, Kan.

Laufer, Stephen
(1940), *Director of Laboratories,* Schwarz Laboratories, Inc., New York, N. Y.

McCarthy, Benjamin L.
(1940), *Chief Chemist and Chief Metallurgist,* Wickwire Spencer Steel Company, Station B., Buffalo, N. Y.

McGee, Lemuel C.
(1940), *Biochemist,* 52 Charlesgate East, Boston, Mass.

McIntire, William C.
(1940), *Chemist,* United Color and Pigment Works, Lebanon, N. J.

Panganiban, Elias H.
(1940), *Owner of Sugar Plantation,* Faraon Occidental Negros, Philippines.

Pfluger, Helmuth L.
(1940), *Research Chemist,* Kendall Company, Woonsocket, R. I.

Roberts, George L.
(1940), *Chief Chemist,* United Carbon Company, Charleston, W. Va.

Rumold, C. F.
(1940), *Professor,* Department of Physical Sciences, Kent State University, Kent, Ohio.

Sauchelli, Vincent
(1940), *Director of Sales Research,* The Davison Chemical Corporation, Baltimore, Md.

Schofield, Samuel B.
(1940), *Dean,* Western Maryland College, Westminster, Md.

Shukers, Carroll F.
(1940), *Assistant Professor,* Departpartment of Physiological Chemistry, School of Medicine, University of Arkansas, Little Rock, Ark.

Stewart, Clifford R.
(1940), *Chief Chemical Engineer, Vice-president,* Faber Laboratories, Los Angeles, Calif.

Sullivan, John D.
(1940), *Chief Chemist,* Battelle Memorial Institute, Columbus, Ohio.

Sumner, James B.
(1940), *Professor of Biochemistry,* Department of Zoology, Cornell University, Ithaca, N. Y.

Thornton, S. F.
(1940), *Director,* Research and Farm Service Department, F. S. Royster Guano Company, Norfolk, Va.

Ullyot, Glenn Edgar
(1940), *Chemist,* Smith, Kline and French Laboratories, Philadelphia, Pennsylvania.

ASSOCIATES:

Buxton, Loran O.
(A.1940), *Research Chemist,* Vitamin Laboratories, National Oil Products Company, Inc., Harrison, N. J.

Cataldo, Joseph R.
(A.1940), *Consulting Chemist,* Industrial Consulting Laboratory, 128 Water Street, New York, N. Y.

Harford, Zaida M.
(A.1940), *Research Chemist,* Bordon Research Laboratory, Bainbridge, New York.

Haber, Norman
(A.1940), *Chief Chemist,* Alsamite Paint and Varnish Company, 3301 East Thompson Street, Philadelphia, Pennsylvania.

Rawles, William T.
(A.1940), *Assistant Chemist,* Agricultural Experiment Station, Reno, Nevada.

Dr. Read reported as chairman of the Chemist Advisory Council.

There being no further business before the Council, adjournment was taken.

May Meeting

THE one hundred and seventy-first meeting of the Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on May 18, 1940, at the Claridge Hotel, Atlantic City, N. J., at 12 o'clock noon.

President Robert J. Moore presided. The following officers and councilors were present: Messrs. D. H. Andrews, M. L. Crossley, G. Egloff, J. W. E. Harrisson, R. J. Moore, H. S. Neiman, W. T. Read, G. E. Seil, M. Toch, and A. H. Warth. Dr. E. R. Allen, Dr. Frank O. Lundstrom and Miss V. F. Kimball were present.

The minutes of the previous meeting were approved. The Treasurer's report, showing a bank balance as of April 30, 1940, of $2588.58, was read and accepted.

Dr. Moore discussed the certification of chemists and stated that this seemed

to have the approval of more chemists than does licensing.

Dr. Harrisson reported for the Committee on Licensing.

Dr. Lundstrom suggested that Chapters of the INSTITUTE be organized in the vicinity of the various U. S. Regional Laboratories, and offered to write to key people in these laboratories to consider the formation of Chapters.

Maurice L. Moore was raised from Associate to Fellow.

Leonard P. Moore was raised from Associate to Fellow.

The following new members were elected:

FELLOWS:

Beckel, Arthur C.
(1940), 706 S. Coler Avenue, Urbana, Illinois.

Day, Harry G.
(1940), *Associate in Biochemistry*, The Johns Hopkins University Baltimore, Maryland.

Fields, Reuben T.
(1940), E. I. du Pont de Nemours and Company, Wilmington, Del.

Ford, J. T.
(1940), *Chief Chemist*, AC Spark Plug Division, General Motors Corporation, Flint, Mich.

Gebert, Emery B.
(1940), 415 Westminster Avenue, Elizabeth, N. J.

Goetz, Alvin C.
(1940), *Manager*, Technical Service Dept., Pigment Division, The Eagle-Picher Sales Company, Cincinnati, Ohio.

Goodman, Henry Gaines
(1940), *Fellow*, Mellon Institute of Industrial Research, Pittsburgh, Penna.

Hansen, Lorenz Peter
(1940), *Associate Professor of Physiological Chemistry*, Jefferson Medical College, Philadelphia, Penna.

Harvey, Mary Gertrude
(1940), *Assistant Professor*, Bradley Polytechnic Institute, Peoria, Ill.

Hinkle, S. F.
(1940), *Chief Chemist*, Hershey Chocolate Corporation, Hershey, Penna.

Kew, Theodore J.
(1940), *Chief Chemist*, Dr. Phillips Company, Orlando, Fla.

Kuhn, W. E.
(1940), *Manager*, Technical and Research Division, The Texas Company, New York, N. Y.

May, George E.
(1940), Hibbing Junior College, Hibbing, Minn.

Miller, Lawrence P.
(1940), Boyce Thompson Institute, Yonkers, N. Y.

Renoll, Mary
(1940), *Research Chemist*, Thomas and Hochwalt Laboratories, Monsanto Chemical Company, Dayton, Ohio.

Stanford, Spencer C.
(1940), Department of Chemistry, The College of Wooster, Wooster, Ohio.

Stewart, Vincent E.
(1940), *Food and Drug Chemist*, Agricultural Department, Chemical Division, State of Florida, Tallahassee, Florida.

ASSOCIATES

Corbet, Ruth E.
(A.1940), *Research Chemist*, Biochemical Research Foundation of the Franklin Institute, Philadelphia, Pennsylvania.

Kirschner, Leon Irvin
(A.1940), *Graduate Student*, University of Pennsylvania, Philadelphia, Penna.

The Secretary announced the election of the following new officers of THE AMERICAN INSTITUTE OF CHEMISTS: President, Harry L. Fisher; Vice-president, W. T. Read; Secretary, Howard S. Neiman; Treasurer, Walter

J. Murphy; Councilors: E. R. Allen, Frank G. Breyer, and Charles N. Frey.

The retiring officers are: President, Robert J. Moore; Vice-president, J. W. E. Harrisson; Treasurer, Burke H. Knight; and councilors Ross A. Baker, Lloyd Van Doren, and Gerald Wendt, and upon motion made and seconded a vote of thanks was given to these officers.

Upon motion made and seconded, a contribution of $100.00 was made to the Chemist Advisory Council.

There being no further business, adjournment was taken.

June Meeting

THE one hundred and seventy-second meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on June 13, 1940, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at 6:30 P.M.

President Harry L. Fisher presided.

The following officers and councilors were present: Messrs. E. R. Allen, H. L. Fisher, M. L. Hamlin, R. J. Moore, W. J. Murphy, H. S. Neiman, W. T. Read, F. D. Snell, and M. Toch. Mr. M. R. Bhagwat and Miss V. F. Kimball were present.

The minutes of the previous meeting were read and approved.

The Treasurer's report, showing a bank balance as of June 13, 1940, of $1810.12, with checks on hand to be deposited of $1623.05, was read and accepted.

The resolution required by the bank, setting forth the names and signatures of the officers who may sign checks, specifically that checks may be signed by the Treasurer or the Secretary, was unanimously adopted.

Upon motion made, seconded, and unanimously carried, the Treasurer was empowered to open a savings bank account of $2500.00, and the President or the Treasurer was empowered to withdraw such sums as shall be granted by a unanimous motion of the National Council.

The Treasurer was requested to determine the cost of and report on the advisability of obtaining a safety-deposit box at the bank.

Upon motion made and seconded, the following new members were elected:

Fellows

Allison, James B.
(1940), *Assistant Professor*, Rutgers University, New Brunswick, N. J.

Rothrock, David Andrew, Jr.
(1940), *Research Chemist*, Resinous Products and Chemical Company, Philadelphia, Penna.

Upon motion made and seconded, the Secretary was requested to invite the chairmen of committees to attend Council meetings.

Upon motion made and seconded, Dr. J. W. E. Harrisson was appointed as Councilor to fill the unexpired term of Dr. W. T. Read, who was elected by the membership to the vice-presidency.

Mr. Bhagwat reported for the Chemist Advisory Council and informed the Council that the Chemist Advisory Council has moved to new headquarters in the Lincoln Building, 60 East 42nd Street, New York, N. Y.

Dr. Snell reported for the New York State Committee on Licensing.

There being no further business, adjournment was taken.

The Chicago Section of the American Chemical Society reports that more than forty-three per cent of the space available at the first annual National Chemical Exposition, to be held in Chicago, December eleventh to fifteenth, is already under contract.

CHAPTERS

New York

Chairman, William Howlett Gardner *Vice-chairman,* W. D. Turner
Secretary-treasurer, D. H. Jackson
17 John Street
New York, N. Y.
Council Representative, Marston L. Hamlin

The New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS held a dinner, business meeting, and informal dance at the Hotel Capitol, New York, N. Y., on Wednesday, May 22, 1940.

The following new Chapter officers were elected: Chairman, Dr. William Howlett Gardner; vice-chairman, Dr. W. D. Turner; secretary-treasurer, Mr. H. D. Jackson; councilors: Dr. Franklin H. Bivins, and Dr. Donald Price; chapter representative to the National Council, Dr. Marston L. Hamlin.

Dr. H. L. Fisher, president of THE AMERICAN INSTITUTE OF CHEMISTS, presented a graph of the rapid increase in membership of the organization and spoke briefly concerning it.

Dancing followed the business meeting. Door prizes of Nylon hosiery were won by Miss Mary Medearis, Mrs. Heinrich Meister, Mrs. Robert J. Moore, and Mrs. Solomon D. Schneider.

Niagara

Chairman, J. Allan Camelford *Vice-chairman,* Alvin F. Shepard
Secretary-treasurer, Wilbert A. Herrett
109 Norwood Avenue
Hamburg, N. Y.
Council Representative, Arthur W. Burwell
Carl H. Rasch, *Alternate*
News Reporter to THE CHEMIST, Margaret C. Swisher

A MEETING of the Niagara Chapter was held at the Buffalo Museum of Science on May 17, 1940. After the dinner annual reports were read by the chairmen of the standing committees and by the treasurer.

Dr. Howard Post presented student medals of THE AMERICAN INSTITUTE OF CHEMISTS to Gerhard Hennig of the University of Buffalo and to George H. Milly of Niagara University for their outstanding work as seniors majoring in chemistry.

The officers elected for the coming year were as follows:

J. A. Camelford, Chairman.

A. F. Shepard, Vice-chairman.

W. A. Herrett, Secretary-treasurer.

A. M. Burwell, Chapter Representative.

C. H. Rasch, Alternate Representative.

Margaret C. Swisher, Reporter to THE CHEMIST.

A symposium, presenting new chemical developments in the Niagara area,

was conducted by F. L. Koethen and W. L. Hyden. W. B. Sheridan reported the production of "Electrically Conducting Rubber." He said that this rubber, when used for tires on gasoline trucks and airplanes, acted as a ground. When used for covering high voltage cables, the electric field is eliminated, ozone does not form and the metal is not destroyed. M. C. Taylor discussed the uses for chlorites, chlorates and perchlorates in industry, in analytical chemistry and as possible explosives. L. M. Lawton showed photographs which illustrated some of the problems involved in the milling of the copper used to make car radiators. A. W. Burwell reported on some of the new lubricants. The metallic soaps and soap esters keep the engines clean and prevent corrosion because they adhere to the metal. A few years ago, a 550 H.P. airplane motor had to be overhauled after 350 flying hours. Because of the use of the new lubricants, a 1000 H.P. motor can go 600 hours and in the near future this will be extended to 1000 flying hours. W. A. Smith said that airplane gasoline is a narrower cut than car gasoline. For higher altitude operation, in this country trimethyl pentane is added, but Germany is using some aromatic compounds. W. L. Hyden discussed new uses for the cellulose sponge and for cordura cord. Andrew Chalmers of the Moore Laboratories discussed the soilless growth of plants. Plants grown in nutrient solutions have no root hairs and the rate of their growth varies with the pH of the solution; roses grow slowly at a pH 6.8-7 and very rapidly at pH 5-6. There are certain chemicals that plants must have. Better control of the proper supply of these substances to the plants is possible when the methods of hydroponics are used than when fertilizer is added to natural soil.

Pennsylvania

Chairman, Addison C. Angus *Vice-chairman*, Edward L. Haenisch
Secretary-treasurer, Harold A. Heiligman
1203 West Oak Street
Norristown, Penna.
Council Representative, Gilbert E. Seil
News Reporter to THE CHEMIST, Kenneth A. Shull

THE March meeting of the Pennsylvania Chapter was held on Tuesday the twenty sixth at the Christian Association Building. Previous to this an informal dinner in honor of the guest speaker was held at the Hotel Normandy.

"Dyestuffs and Disease" was the subject presented by Dr. Ivor Griffith, F.A.I.C., well known scientist and lecturer. Among other things, Dr. Griffith is dean of pharmacy at the Philadelphia College of Pharmacy and Science, director of research at the Stetson Hat Company, director of laboratories at Stetson Hospital, research advisor to the McNeil Laboratories, and editor of the *American Journal of Pharmacy*.

Before entering into the actual subject of dyestuffs, the speaker suggested a new term—a new science—that of chromatotherapology. We believe this to be of sufficient interest and importance to quote some of his words verbatim.

> "Chromatotherapology is the science dealing with the effect of color on the human body. Strangely enough, interior

decorators have regarded this study with more practical respect than have physicians. For instance, although rarely done, it would be perfectly *reasonable* for a doctor to prescribe a lavender color scheme, and lavender wall paper, draperies, clothes, and even lavender medicine, for a highly neurotic patient; and especially so, if the patient were obese, or a natural blond. Such a prescription would be thoroughly scientific.

"Red excites, and so to a lesser degree do orange and yellow. Shades of violet, indigo, and blue have a calming effect, although the livid blue, the cyanotic blue, is melancholic. Generally, green gives pleasure, and then a sense of peace, yet there are yellow greens that nauseate.

"Red, in some of its hues and values, constricts large spaces, red painted rooms appearing both confiningly hot and tight, but red emphasizes the size of smaller objects. Thus a pink-colored pill appears larger than a like-sized pill coated with the light-absorbing chocolate. Lighter blues belie the borders of a room, and with their hints of summer heavens, bring calm to tired souls. Certain yellows are bilious, unfriendly, especially in the chrome range. Yet they are said to stimulate the flow of bile, and so assist intestinal digestion. Does red by the same token, incite the spleen and marrow to haematopoietic riot?"

Dyestuffs may be defined as soluble substances which possess a color and which are able to impart a color to fibre, with or without the use of mordants. They may be either classified as acid, basic, mordant, vat, etc., or according to their chemical structure.

The history of dyes is a fascinating one. Mention is made in the Bible of Joseph's coat of many colors. However, recently obtained facts seem to indicate that but three colors were known at that time. Indigo and logwood must have been known to the ancients. Long before Christ, people of Tyre were using Tyrian purple obtained from shellfish. Cochineal, extracted from the dried bodies of the female insect, was used at an early date, and even today tinctures many of our pharmaceutical preparations. Recorded somewhere in literature is the change which this substance undergoes when treated with spirits of hartshorn—probably the first mention of a chemical indicator.

The first synthetic dyestuff (mauve) was accidently discovered by William Henry Perkin while trying to synthesize quinine from crude aniline (due to presence of impurity, allyl toluene). Today every color imaginable, for almost every conceivable purpose can be obtained from coal tar, and this industry is one of the largest in the world.

Dyestuffs may be used in disease for both diagnostic and curative purposes. Many preparations, when taken internally, find their way to definite organs and make them, or deformations present therein, visible to the eyes of the x-ray. Phenolsulfonephthalein has been used for some time as a test for kidney function.

Compounds such as gentian violet, malachite green, and methylene blue will inhibit the growth of bacteria, and accordingly are used as skin disinfectants. Merchurochrome, a bright red, water soluble powder, is used as an antiseptic.

Recently a number of chemotherapeutics-dyes or relatives of them have been developed. Sulfanilimide and its derivatives, and sulfapyridine are examples of these.

It is interesting to note that the molecular structure of such substances as bile acids, sterols, hormones, and certain plant principles are closely related to many of the dyestuffs.

Dr. Griffith performed several experiments to illustrate the production of dyes and the nature of the dyeing process itself.

THE last official meeting of the present year was held at the Christian Association Building on Tuesday, April twenty-third. Dr. Gilbert E. Seil explained briefly the plans for the Atlantic City convention, for which the Pennsylvania Chapter is host. The

following officers were elected for next year: Chairman, Dr. Addison C. Angus; Vice-chairman, Dr. Edward L. Haenisch; Secretary-treasurer, Dr. Harold A. Heiligman; Council Representative, Dr. Gilbert E. Seil; and Publicity and News Reporter, Kenneth E. Shull.

The Pennsylvania Chapter was honored in having as guest Dr. Robert J. Moore, national president. Dr. Moore discussed briefly the past year's activities of the National Council as well as plans for the future.

Dr. Frederick R. Greenbaum, director of pharmaceutical Research for the National Drug Company, presented the scientific paper of the evening. This was entitled "The Story of Allantoin".

During the 15th and 16th centuries comfrey root was used in England to treat cases of ulcers of the stomach. In 1912, McAlister studied the root in order to determine the mechanism of its action. He found it to contain glucosides, polypetides, sugars, and allantoin (0.8%). The latter substance was found to be the healing agent and was accordingly prepared and tried in pure form. For some reason or other this discovery remained in obscurity until 1935. It had been found in 1927 by Dr. Robinson that the active principle in the excretion of maggots is this same allantoin. (It may be recalled that the use of maggot therapy was introduced during the World War).

Allantoin can be synthesized by the oxidation of uric acid with alkaline potassium permanganate. It is the diurate of glyoxylic acid, possess a definite crystalline structure, definite melting point, and is easy to analyze and standardize.

Internally, allantoin finds application in the treatment of gastric and duodenal ulcers, gastralgia, etc. It is also valuable externally as a cell proliferant (burns, etc.) The best solution to use is one of about 0.4 per cent. Recently there has been prepared a 2 per cent ointment which has found application in the treatment of nasal infections.

Experimental research has revealed many interesting facts concerning the effects of allantoin on the human system. It is known that normal rabbit blood contains about five per cent of allantoin. After the intra-muscular injection of a certain amount of the material, the blood content rises to a maximum in 0.75 hours, but at the end of 2.75 hours is again back to normal. This drug is definitely antagonistic to blood, yet is non-toxic to the human system.

Dr. Greenbaum showed many slides of actual clinical cases to illustrate the miraculous healing powers of allantoin.

Robert M. Chapin, U. S. Biochemist, Dies

Robert Macfarlane Chapin, chief of the Biochemic Division of the Bureau of Animal Industry, U. S. Department of Agriculture, died at Johns Hopkins Hospital, Baltimore, Md., on May sixth. Death followed a brief illness and a brain operation. He was 62 years of age.

Mr. Chapin entered the Bureau's service in 1907. Here he engaged in biochemical research relating largely to the development and standardization of disinfectants, livestock dips, and related products. He was associated for many years with Dr. M. Dorset, discoverer of anti-hog-cholera serum, whom he be succeeded as chief of the Biochemic Division of the Bureau in 1935. Since that time Mr. Chapin had directed a wide range of research and service activities at the Bureau.

Washington

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Vice-president, Albin H. Warth *Treasurer,* Philip A. Wright

Secretary, Martin Leatherman
9 Quincy Avenue, Hyattsville, Md.

News Reporter to THE CHEMIST, Alexander J. Stirton

Council Representative, Albin H. Warth

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THE annual Baltimore meeting of the Washington Chapter was held on Tuesday, April 23, 1940. Through the kind offices of Dr. Albin H. Warth, vice-president of the Chapter and also chemical director of the Crown Cork and Seal Company, an inspection tour was made of the Crown Cork and Seal Company's plant. The members gathered later for an excellent dinner at the Emerson Hotel. A brief business meeting followed.

Dr. Warth gave a very interesting summary of the numerous steps and operations involved in the manufacture of composition cork seals and other products, adding sidelights which made the inspection trip more vivid and worthwhile.

Dr. N. W. Matthews, who was in charge of the arrangements for the dinner and place of meeting, was warmly thanked for his part in making the Baltimore meeting an outstanding success.

THE SCIENCE ANGLER

Kenneth E. Shull, J.A.I.C.

Today it is not enough that a public water supply be of sufficient quantity to meet all demands, and pure enough to fall within the limits of sanitary standards. Consumers now demand that it also be palatable, that is free from obnoxious tastes and odors.

This latter problem has been solved to a certain extent by the use of activated carbon—a specially prepared char which has unusual powers of adsorption. This material is so finely divided that as many as 100,000,000,000 individual carbon particles may be present in a gram. When applied to water at the rate of fifteen pounds per million gallons, about 10,000 particles will be found in a single drop.

Here is a blow to those who try to mask B. O. Certain of the organic acids present in perspiration have been found to possess fungicidal properties. Indeed it is now believed that the prevalence of fungoid infections on people inhabiting warm countries is due to a dilution of the sweat to such an extent that it is no longer able to exercise its beneficial effects.

The disease may be alleviated by the application of a ten per cent sodium propionate solution in fifty per cent alcohol.

In ye olde days, a bath was a bath, unless indulged in more often than once a year, whereupon it became a headache. Today we are told that in order to gain the fullest benefits from our aqueous submergence we must have the proper psychological surroundings.

In keeping with this idea chemists have prepared a powder which, dissolved in water, turns it a milky white and forms a blanket of bubbles. The product may be obtained with a great variety of odors, such as geranium, jasmine, and pine.

Much interesting work has been carried out in connection with the preparation of fusible alloys (those which melt below the M.P. of tin). Some of the oldsters, such as Rose's metal, Newton's metal, D'Arcet's metal, and Wood's metal are familiar to all.

A new combination, studied by Dr. French of Colgate, consists of bismuth, lead, tin, cadmium, and indium (18%), and melts at 47°C. The addition of one per cent of gallium lowers the melting point to 41.5°C.

Such low melting alloys have found application in surgical casts, finger print impressions, art medallions, and thermal control instruments.

No one wants to pay a not-so-light monthly light bill of $346.65; yet according to *Monsanto Magazine* that would be the pecuniary output, if we were to use sufficient candles to obtain the same amount of light now received from electric light bulbs. About one half ton of candles would be required —and that's quite a lot of pig fat.

NORTHERN LIGHTS

By Howard W. Post, F.A.I.C.

It is reported that an Inventions Board has been established to deal with "the growing volume of inventions and suggestions intended to further Canada's war effort." The announcement comes indirectly from the office of Hon. W. D. Euler, minister of trade and commerce and chairman of the committee of the Privy Council on Scientific and Industrial Research. It is understood that the personnel of the board which will consider these ideas will be representative of the Laboratory Division of the National Research Council, the Navy, Militia and Air Force and such other interests as the Department of National Defense itself, the War Supply Board, and the Patent Office.

This war is characterized by a desire to "prepare for peace in time of war" to a much greater extent than any previous war. Why may not civilized nations take a lesson from the

existence of this board and continue its functions or those of some similar organization into the times of peace which will surely come some day? Various interests do try to carry out this idea on a small scale but not on the broad plans contemplated in war time.

A recent editorial in *Canadian Chemistry and Process Industries* attracted our interest, for its treatment of the ever-present problem of alcohol as a motor fuel. From the standpoint of national self-sufficiency, it has been estimated that Canada would require eighty million gallons of non-beverage alcohol to effect a ten per cent blend with gasoline. That, in the opinion of the writer of the editorial, is a quantity sufficiently high that its maintenance would require some economic juggling. Where would it come from? In terms of wheat, forty million bushels would be required, of potatoes, one hundred thirty-three million bushels, of sugar beets, four million tons, or of barley, fifty-three million bushels, per year.

Canadian Industries, Ltd., presents a summary of its own financial condition in a recent issue of *The C-I-L Oval*. We learn that the raw materials entering into the composition of cellophane sold in Canada have come for the most part from Canada, the European war having had little if any effect on the flow of these necessities. There seems to have been a lesser production of automobiles in Canada during 1939 but sales of paints, varnishes, etc., which ordinarily would be made to the automotive industry, have shown a slight increase nevertheless. Growth of the organization's manufacturing investment during the last ten years has been almost entirely the result of construction and this in the form of additional plant capacity. Less than ten per cent of the increase has come from the purchase of the property of other corporations. Increased and more varied production in the chemical line has made this expansion practicable through association with units such as the E. I. duPont de Nemours & Co., and Imperial Chemical Industries, Ltd.. Certain inorganic chemicals remained at the same level as during 1938, but there has recently been a sharp increase in the output of textiles and paper and consequently in the consumption of dyestuffs.

BOOKS

REFERENCE BOOK OF INORGANIC CHEMISTRY. By Latimer and Hildebrand. *The Macmillan Company*. 4th Ed. $4.00.

According to the preface of the first edition, "the *Reference Book of Inorganic Chemistry* has been written as a reference book rather than a text."

Its success as a text is evidenced by this new edition, the fourth, which follows the third by only two years. There is very little difference in total volume between the two editions, but the present one contains 120 more pages. Most of this apparent increase is due to the use of a larger and more legible type.

In rewriting the book, some revisions have been made in many values of

physical constants. The chapter on atomic nucleus has been completely rewritten, and many other minor changes have been made. In the appendix, two less useful tables have been dropped and replaced by tables on the "Structure of Molecules and Ions" and on "Co-valent Bond Energies and Atomic Radii."

The use of the book as a text calls for considerable planning on the part of the teacher in mapping his own course. As a handy reference of inorganic chemistry, for purposes which do not warrant consulting the standard works, such as Mellor, the book is very useful. The reviewer is glad to recommend it for both purposes for which it is designed.

—KARL HERSTEIN, *F.A.I.C.*

ELEMENTARY LABORATORY EXPERIMENTS IN ORGANIC CHEMISTRY. By Roger Adams and John R. Johnson. *The Macmillan Company*. 3rd Edition 1940. 420 pp. $2.00.

Two eminent chemists have prepared this laboratory manual for beginning students in organic chemistry, stressing the importance of mastering the principles involved in common laboratory procedures before an attempt is made to prepare organic compounds or to study organic chemical reactions.

The experiments given include the following types of preparations: "Those representing some of the most important reactions; those involving the preparation of substances readily obtained in good yields; those using the cheapest reagents coincident with the best results; those presenting series of reactions so that a student may use previously prepared materials, such as the series, nitrobenzene—analine—acetanilide— p-bromoacetanilide, etc. . . ."

Material to assist the teacher, such as suggested course outlines, a procedure for keeping notes and for determining the student's ability, is contained in the appendix.

The book is artistically designed and printed. The pages are perforated, which make it easy to detach the experiment sheets. Diagrams of the common apparatus used in organic chemistry assist the beginning student.

New material added to this third edition includes experiments in the field of synthetic polymers and polymerization, consistent with the rapid commercial developments along this line.

KINGZETT'S CHEMICAL ENCYCLOPAEDIA. Revised and Edited by Ralph K. Strong, Ph. D. *D. Van Nostrand Company*. 6th Edition. 1940. 1088 pp. $14.00.

The sixth edition of this recognized encyclopaedia of chemicals has just been issued from the press, and it presents a book greatly enlarged and expanded in both size and contents from the previous editions.

The valuable feature of this book is its inclusion of many commercial names of chemicals, with reference to their properties and uses, and thus it combines both a strictly chemical dictionary as well as a commercial index to chemicals which are known generally under their commercial designations. Each subject is treated in detail, and a reference to the original publication is given in each statement, condensed for purposes of a publication of this character.

Reference is made to the many new industrial solvents which have been placed upon the market since the last edition, and the article on chemical engineering has been greatly expanded

and includes a consideration of materials, energy, apparatus and economics. The article on bacteria is an up-to-date, authoritative summary of this important ancillary subject. A new feature of this book is its tabulation of production and imports by countries of the more widely used chemical commodities, and this feature will be of value to those who are considering the commercial production of these products.

The systemization of organic chemistry is assisted by the use of charts of selected groups of chemical compounds, such as those containing carbon and nitrogen, and the typical alcohols, aldehydes, and carboxylic acids, and the tabulations of the products of the acetylene and ethylene industries illustrate recent developments in the technology of these hydrocarbons.

The article on coal carbonization has been completely rewritten in order to introduce references to carbonizations at high and low temperatures. There has been a very considerable revision and expansion of all of the references which appeared previously, and the articles on proteins and vitamins have been particularly enlarged.

The typography of this book is most excellent and it is capable of ready reference and easy reading. A copy of this publication should be in the library of every chemist and everyone interested in chemistry as an at-hand reference book for every day use.

CHEMISTS

Joint Committee of Professional Societies

DELEGATES representing nineteen professional societies met in the Department of Agriculture, Washington, D. C., June 19, 1940, at 8:00 P.M. to create a Joint Committee of Professional Societies, sponsored by the Washington Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

Dr. F. J. Schneiderhan, executive secretary of the Organization of Professional Employees of the Department of Agriculture, was elected chairman of the Committee. Mr. A. L. Mehring, chairman of the Civil Service Committee of the Washington Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, was elected secretary.

The organizations represented were as follows: Alpha Chi Sigma, Washington Professional Chapter; American Association of Engineers, Washington Chapter; American Institute of Architects, Washington Chapter; AMERICAN INSTITUTE OF CHEMISTS, Washington Chapter; American Institute of Electrical Engineers, Washington Section; American Institute of Mining and Metallurgical Engineers, Washington Section; American Society of Civil Engineers, District of Columbia Section; American Society of Heating and Ventilating Engineers, Washington Chapter; American Society of Mechanical Engineers, Washington Section; Chemical Society of Washington; District of Columbia Library Association; Geological Society of Washington; Institute of Radio Engineers, Washington Section; Medical Society of the District of Columbia; Organization of Professional Employees of the Department of Agriculture; Society of Agri-

cultural Engineers, Washington Section; Society of American Foresters; Society of Automotive Engineers, Washington Section, and Washington Society of Engineers. Twelve of the different engineering organizations were represented by one delegate, acting through a council. The Bar Association of the District of Columbia was not represented but the intention to coöperate had been expressed.

The joint Committee of Professional Societies in this first meeting drew up the following important objectives:

1. To work for policies that will attract and retain in public service the highest type of qualified professional workers.

2. To coöperate in obtaining the adoption of entrance, training, promotion and other employment policies which will contribute to this end.

3. To act as a clearing house for information affecting the welfare of professional employees in public service.

4. To bring to the attention of specialized groups proposed and pending legislation and policies affecting the welfare of their members.

5. To provide a means for coöperative effort in the solution of problems of general interest to the associated societies.

Dr. Schneiderhan gave a summary of pending legislation on retirement. He discussed the Neely-Cramer, the Ramspeck, and the Meade bills.

With the formation of the Joint Committee of Professional Societies, another one of the major objectives of the Washington Chapter of THE AMERICAN INSTITUTE OF CHEMISTS has been brought to a successful conclusion. The Civil Service Committee of the Washington Chapter has had the matter of the Joint Committee under consideration for some time. It has contacted nearly thirty professional societies and has had favorable response from the major portion of them.

W. B. Van Arsdel To Head Engineering Development Division at Western Laboratory

The appointment of W. B. Van Arsdel as chief of the Engineering and Development Division of the U. S. Department of Agriculture's Western Regional Research Laboratory at Albany, California, was announced today by Dr. Henry G. Knight, F.A.I.C., chief of the Bureau of Agricultural Chemistry and Engineering.

As chief of the Division, Mr. Van Arsdel will head the engineering development of processes worked out in the Western Laboratory, and the study of industrial opportunities for expanding outlets for farm products.

Dr. O. C. Magistad Appointed Assistant Chief Plant Industry

Dr. E. C. Auchter, chief of the U. S. Department of Agriculture's Bureau of Plant Industry, today announced the appointment of Dr. O. C. Magistad, as assistant chief of the Bureau. Doctor Magistad has been in charge of the U. S. Regional Salinity Laboratory at Riverside, California, since 1938, and will give special attention to the soils investigations of the Bureau. He will be succeeded by Dr. R. H. Walker, dean of the College of Agriculture and director of the Utah Agricultural Experiment Station.

At the meeting of the American Ceramic Society held in Toronto, April eighth and ninth, 1940, Dr. Gilbert E. Seil, F.A.I.C., read two papers which were widely discussed.

The first paper, to which an entire session was given, was "The Orthosilicates of the Alkaline Earths with Special Reference to their Uses in the Refractory Field". The second paper was entitled, "Apparatus and Method for the Determination of Porosity in Refractory Materials".

General Otto H. Falk, board chairman of the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, died on May 21, 1940.

Florence E. Wall, F.A.I.C., has been engaged to give courses relating to cosmetics at Clemson College, South Carolina, in coöperation with the State Board of Vocational Education and the State Board of Cosmetic Art, beginning June tenth for three weeks. She will then return to New York to give similar courses in the summer school of New York University.

Foster Dee Snell recently addressed the Case Student Chapter of the American Institute of Chemical Engineers at Cleveland, on the subject of "Opportunities in Chemistry and Chemical Engineering". The functions of both the chemist and the chemical engineer in research were discussed as there is as much engineering as chemistry in such problems. In either case, a man to succeed in chemistry and chemical engineering must be vitally interested in the work.

Marston T. Bogert Honored

Photo by Murphy

Marston T. Bogert, F.A.I.C., was the guest of honor at a dinner given by The Chemists' Club, New York, N. Y., at which he was presented with a scroll of honorary membership. Dr. Bogert was one of the signers of the original articles of incorporation of The Chemists' Club in 1898. He also served as its president.

Dr. Frank C. Whitmore acted as toastmaster. Among the speakers were Dr. Leo H. Baekeland, honorary member of THE AMERICAN INSTITUTE OF CHEMISTS, Dr. Harry L. Fisher, F.A.I.C., and Dr. F. M. Becket, president of The Chemists' Club.

The American Section of the Society of Chemical Industry announces the election of the following officers for the year 1940-41.

Chairman, Dr. Lincoln T. Work; Vice Chairman, Dr. Foster Dee Snell, F.A.I.C.; Honorary Secretary, Mr. Cyril S. Kimball, F.A.I.C., and Honorary Treasurer, Mr. J. W. H. Randall, F.A.I.C.

The following new Committee members were elected to take the place of retiring members:

W. P. Cohoe, F.A.I.C., W. A. Gibbons, F.A.I.C., W. J. Baeza, F.A.I.C., J. G. Detwiler, and S. D. Kirkpatrick.

EMPLOYMENT

Chemists Available

COLLEGE TEACHER. American, Ph. D., F.A.I.C., Sigma Xi. Inorganic analytical, organic and industrial chemistry. Several years' university teaching, six years' experience in the chemical industry in heavy chemicals, analytical methods, control, supervision. Publications. Location anywhere. Please reply to Box 31, THE CHEMIST.

RESEARCH - DEVELOPMENT CHEMIST, F.A.I.C., M.S. (M.I.T.) Organic Chemistry. Ex-chief chemist forced to change by conditions beyond his control. Well qualified by sufficient training and fifteen years (in good positions) in chemicals, latex, gases, and patents. Best personal and professional references. Complete details for confidential consideration. Available now. Please reply to Box 11, THE CHEMIST.

CHEMIST, F.A.I.C., A.C.S. Doctor of Chemistry. 29 years manufacturing and developing experience in intermediates, dyestuffs, metal salts and food products. Original manufacturing processes developed. Successful in handling labor. Considerable consulting and business experience. First class references. Please reply to Box 35, THE CHEMIST.

CHEMIST, J.A.I.C. B.S. 1940. Six months' experience during summers in rubber factory. Fluent French and German. Interested in position as laboratory assistant or translator. Please reply to Box 55, THE CHEMIST.

CHEMIST, B.S., M.S. Age 40, with good record of successful business experience has funds to promote sound product or join new chemical business venture. Would also be interested in adding capital to established enterprise which requires services of a capable executive. Address full particulars to Box 33, THE CHEMIST.

CHEMIST. B.S. Age 26. Phi Lambda Upsilon. Graduate work in Organic, Physical Chemistry and Biology. French and German. Most interested in synthesis or determination of substances of biological significance. Experience in inorganic and analytical. Will listen to proposition with future. Please reply to Box 21, THE CHEMIST.

CHEMIST, F.A.I.C. B.S. and M.S. degrees. American. Over thirty years' experience in Agricultural Chemical work along soil, fertilizer and plant lines in both research and analytical capacity. Experienced in by-product waste utilization and patent searches. Available for consulting work. Please reply to Box 51, THE CHEMIST.

CHEMIST, J.A.I.C., A.B. degree 1940. Phi Beta Kappa. Two years of college work in analytical chemistry—qualitative and quantitative; also courses in inorganic, organic, physical chemistry. Interested in any chemistry work. Please reply to Box 53, THE CHEMIST.

Members of The American Institute of Chemists may insert Position Wanted or Position Available notices without charge.

U. S. Civil Service Examinations. No. 88 (Unassembled)

Senior Cotton Technologist, $4,600 a year.

Cotton Technologist, $3,800 a year.

Associate Cotton Technologist, $3,200 a year.

Assistant Cotton Technologist, $2,600 a year.

Applications must be on file with the U. S. Civil Service Commission at Washington, D. C. by August 12, 1940, except far-western states, which may file by August 15, 1940.

Vacancies exist in the Southern Regional Research Laboratory at New Orleans, and in Washington, D. C.

Information and forms may be obtained from the Secretary, Board of United States Civil Service Examiners, at any first or second class post office; from the United States Civil Service Commission, Washington, D. C., or from the United States Civil Service district office in cities where these are located.

Positions Available

CHEMIST who can formulate lacquer and synthetics. Textile finishes. $3,900.

INK CHEMIST. Heavy experience on vehicles.

PH. D. Experienced in field of aromatic research. $5,000 up.

CHEMIST with five years experience in paper mill chemistry. $3,500 up.

Gilbert E. Seil, F.A.I.C., was the speaker at a dinner of the Men's Club of the Frankford Congregational Church in Philadelphia on Thursday, May 23, 1940. The subject of his talk was, "Some Interesting Aspects of Chemistry", and it was heard with a great deal of interest by a group of professional and business men.

Foster Dee Snell, F.A.I.C., recently addressed the St. Joseph Valley Section of the American Chemical Society at Notre Dame on the subject of "Some Factors in Detergency". The removal of soil from textiles, dishes, metal, the skin and other surfaces depends on the same factors. Dr. Snell outlined the known factors which control the efficiency of a detergent and illustrated their applications.

Gilbert E. Seil, F.A.I.C., was the dinner speaker at the summer meeting of the Pennsylvania Chemical Society held at State College on June first. The subject of Dr. Seil's talk was "How Do Chemists Get That Way". Ivor Griffith, F.A.I.C., acted as toastmaster.

NOTICE

The offices of The Chemist Advisory Council have been moved from 300 Madison Avenue, to the Lincoln Building, 60 East 42nd Street, New York, N. Y.

Objectives
of the
AMERICAN INSTITUTE of CHEMISTS

To give chemists professional solidarity.

To put the profession back of a definite code of ethics.

To insist on adequate training and experience qualifications.

To educate the public to an understanding of what a chemist is.

To protect the public and the profession by fighting quackery.

To raise the economic status of chemists.

HOWARD S. NEIMAN, *Secretary*
The American Institute of Chemists
233 Broadway, New York, N. Y.

Please send me an application blank for membership in the American Institute of Chemists.

Name .....

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